A Phase I Archaeological Survey of the Fall 1994 Rehab Areas in Training Areas 9 and 10 on the Fort Knox Military Reservation, Meade County, Kentucky

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16. Abstract (Limit: 200 words)

A Phase I archaeological study was conducted of two areas, totalling 121 ha (299 acres), scheduled for rehabilitation on the Fort Knox Military Reservation, Meade County, Kentucky. The survey, conducted from April-August 1994, recorded 30 sites (15Md347-15Md376), and 10 prehistoric isolated finds. The sites include Early Archaic through Middle Woodland components, plus prehistoric sites of indeterminate affiliation, and mid nineteenth to mid twentieth century historic sites. Sites 15Md347, 15Md348, 15Md350, 15Md352-15Md374, 15Md376, and the isolated finds are not eligible for the National Register. No additional archaeological investigations are recommended for these sites and isolated finds. Sites 15Md349 (Late Archaic), 15Md351 (Late Archaic), and 15Md375 (Early Archaic and Middle Woodland) are open habitation sites. They are considered potentially eligible for the National Register, because of the possibility of intact cultural deposits and/or the possibility of identifiable activity areas on the site surface. Additional archaeological investigations are recommended for 15Md349, 15Md351, and 15Md375. These investigations should be integrated into and coordinated with the rehab activities.

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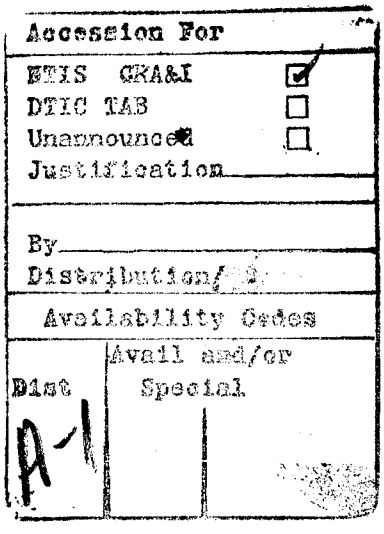
ABSTRACT

In April through August 1994, the Fort Knox cultural resource management staff conducted a Phase I archaeological survey and literature review of approximately 121 ha (299 acres) in two scheduled rehabilitation areas on the Fort Knox Military Reservation, Meade County, Kentucky. The survey resulted in the recording of 30 sites (15Md347-15Md376), and 10 prehistoric isolated finds (TA9-IF2 and TA10-IF1 through TA10-IF9).

Site 15Md366 is of Early Woodland affiliation, 15Md353 has Early Archaic and Middle Archaic components, and 15Md348 has Late Archaic and Middle Woodland components. Sites 15Md347, 15Md350, 15Md352, 15Md354, 15Md355, 15Md357-15Md361, 15Md363, 15Md365, and 15Md368, 15Md369, 15Md372, 15Md373, and 15Md376 are lithic scatters of indeterminate prehistoric affiliation. Sites 15Md356, 15Md364, 15Md367, 15Md370, 15Md371, and 15Md374 are remnants of mid nineteenth to mid twentieth century historic farmsteads. Site 15Md362 has an indeterminate prehistoric component and a mid nineteenth to mid twentieth century component. Sites 15Md347, 15Md348, 15Md350, 15Md352-15Md374, 15Md376, and the isolated finds are not eligible for the National Register. All 10 isolated finds are of indeterminate prehistoric affiliation. No additional archaeological investigations are recommended for sites 15M3247, 15Md348, 15Md350, 15Md352-15Md374, 15Md376, and the isolated finds.

Sites 15Md349, 15Md351, and 15Md375 are open habitation sites. Sites 15Md349 and 15Md351 have Late Archaic components and 15Md375 has Early Archaic and Middle Woodland components. They are considered potentially eligible for the National Register, because of high artifact densities, the presence of artifact concentrations, the possibility of intact cultural deposits and/or the possibility of identifiable activity areas on the site surface. Additional archaeological investigations are recommended for 15Md349, 15Md351, and 15Md375. These investigations should be integrated into and coordinated with the rehab activities.



MANAGEMENT SUMMARY

In accordance with Executive Order 11593 and other applicable federal laws and regulations, a Phase I archaeological study was conducted of two areas, totalling 121 ha (299 acres), scheduled for rehabilitation on the Fort Knox Military Reservation, Meade County, Kentucky. The survey, conducted from April-August 1994, resulted in the recording of 30 sites (15Md347-15Md376), and 10 prehistoric isolated finds. The sites include materials diagnostic of the Early Archaic through Middle Woodland cultural-temporal affiliations, plus prehistoric sites of indeterminate affiliation, and mid nineteenth to mid twentieth century historic sites.

Sites 15Md347, 15Md348, 15Md350, 15Md352-15Md374, 15Md376, and the isolated finds are not eligible for the National Register. No additional archaeological investigations are recommended for these sites and isolated finds.

Sites 15Md349 (Late Archaic), 15Md351 (Late Archaic), and 15Md375 (Early Archaic and Middle Woodland) are open habitation sites. They are considered potentially eligible for the National Register, because of the possibility of intact cultural deposits and/or the possibility of identifiable activity areas on the site surface. Additional archaeological investigations are recommended for 15Md349, 15Md351, and 15Md375. These investigations should be integrated into and coordinated with the rehab activities.

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I. INTRODUCTION

In April through August 1994, the Fort Knox Cultural Resource Management (CRM) staff performed a Phase I archaeological survey of two proposed rehabilitation (rehab) areas in Training Areas 9 and 10 at Fort Knox, Meade County, Kentucky (Figures 1 and 2). The rehab areas comprise a total of approximately 299 acres (121 ha). The proposed rehab area in Training Area (TA) 9 is in Hunting Area (HA) 13 and encompasses 95 acres (38.4 ha). The proposed rehab area in TA 10 consists of 204 acres--23.7 acres (9.6 ha) in HA 10 and 194.4 acres (78.6) in HA 11. An additional 85 acres (34.4 ha) in HA 13 and an additional 106 acres (42.9 ha) in HA 11 were surveyed during the project.

The areas scheduled for rehabilitation are current or former tank training areas. The objectives of rehabilitation of these areas are to control erosion and sedimentation, to restore natural landscape and terrain suitable for further tank training, and to create noise and dust barriers. Along eroded road cuts, the rehabilitation will consist of grading the road cut to remove gullies and planting the cutbank in erosion controlling vegetation. In tank training areas, the deep gullies on ridge slopes will be filled in by grading the adjoining slopes, essentially transforming the terrain from dissected uplands to undissected uplands by smoothing the contours on the slopes. The ridge tops and upper slopes will be plowed or disked, and the entire rehabilitation area will be seeded in erosion controlling plants. Where possible, rehab activities avoid the removal of existing large trees. In this project, the contractor will be required to avoid impact to vegetated areas in and adjacent to specific sinkholes (Figures 3 and 4). The contract for the rehab work is scheduled to be awarded in mid-August 1994. The rehab fieldwork will begin in early September, but might not be completed until Spring 1995, depending on weather conditions.

The archaeological survey and literature review conducted in preparation for the rehabilitation activities were required to comply with the National Environmental Protection Act, or NEPA (Public Law 91-190), the Historic Preservation Act of 1966, as amended (Public Law 89-665), the Archaeological Resources Protection Act of 1979 (Public Law 96-95), Presidential Executive Order 11593, and Army Regulation 420-40. During 1993, the Fort Knox Staff Archaeologist obtained all the documents necessary to perform Phase I literature searches for the installation (e.g., site forms, reports of previous investigations, historic maps), and these are on file at the Cultural Resource Management Branch of the Directorate of Public Works, Fort Knox. No file check was made with the Office of State Archaeology and the Kentucky Heritage Council specifically for this project. A literature search revealed that neither of the scheduled

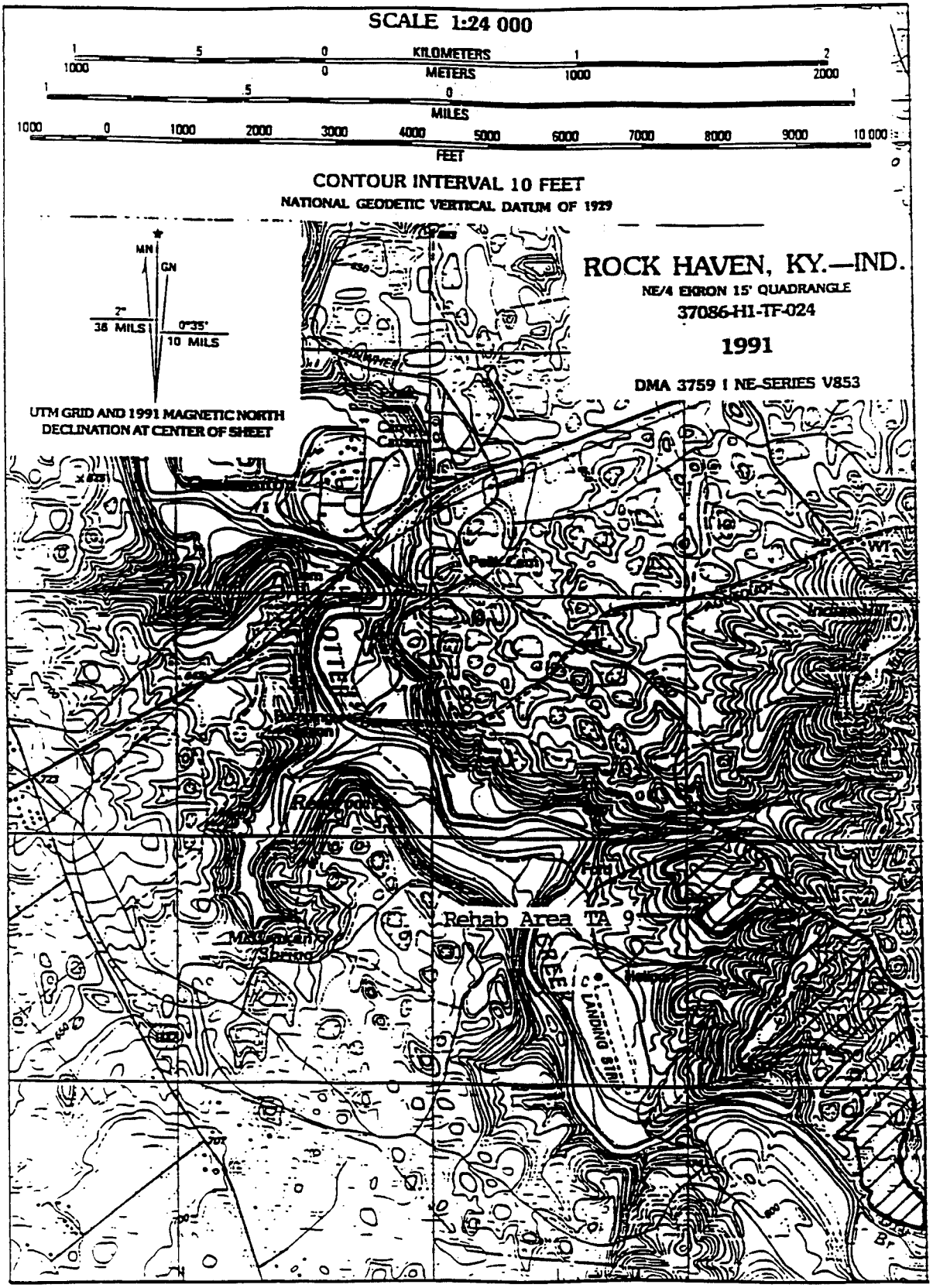


Figure 1. Location of Project Area in Training Area 9.

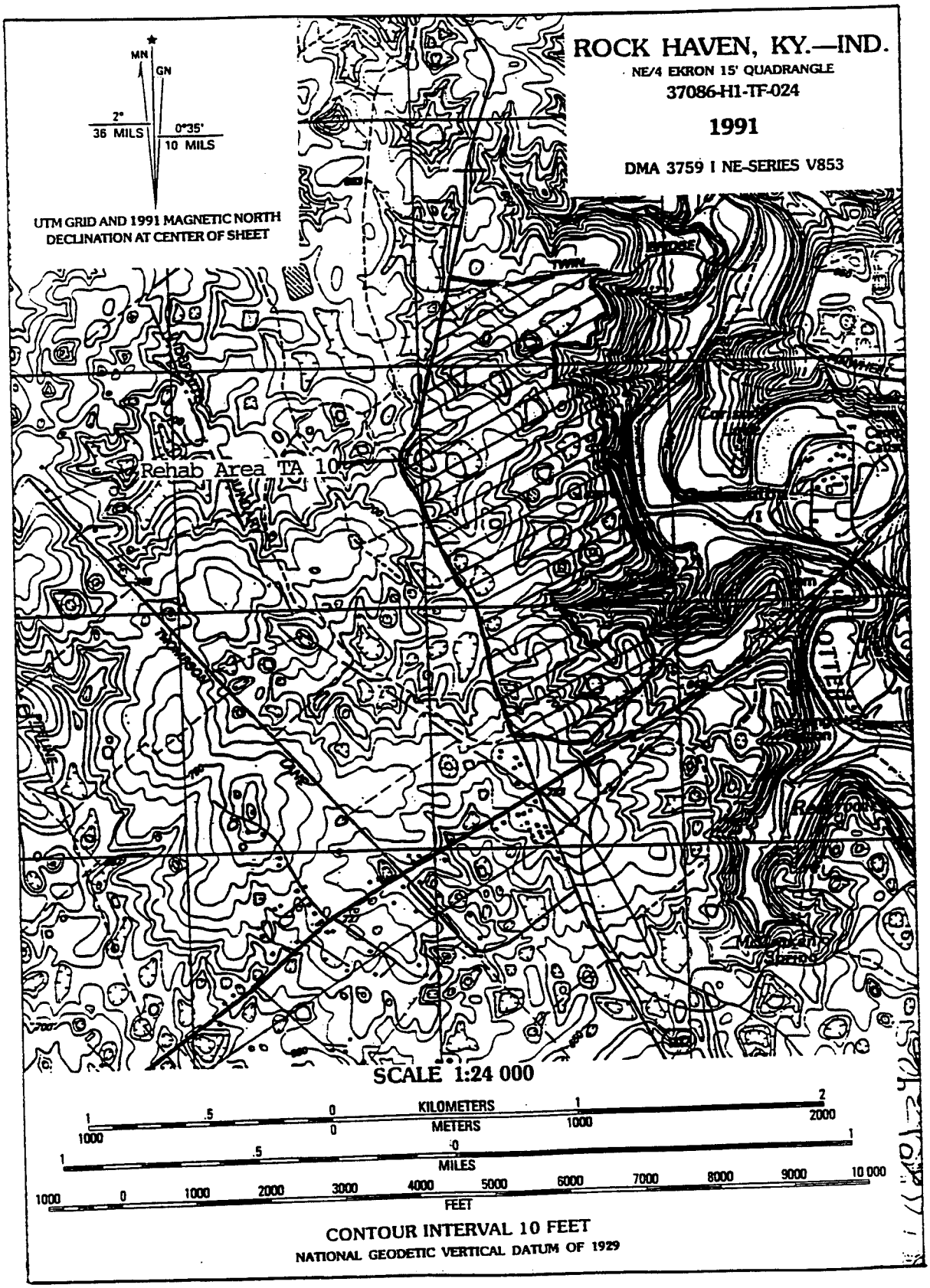


Figure 2. Location of Project Area in Training Area 10.

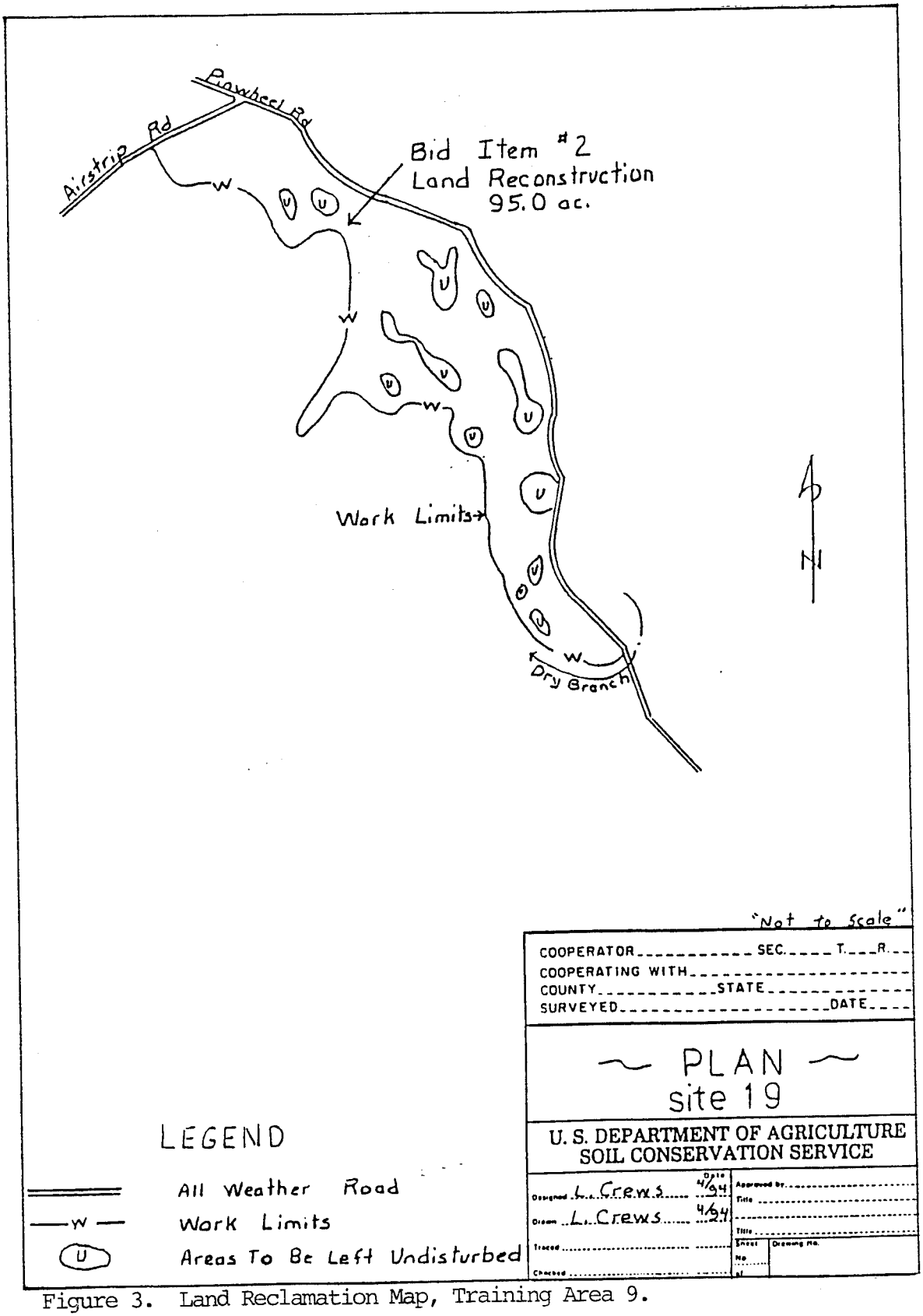


Figure 3. Land Reclamation Map, Training Area 9.

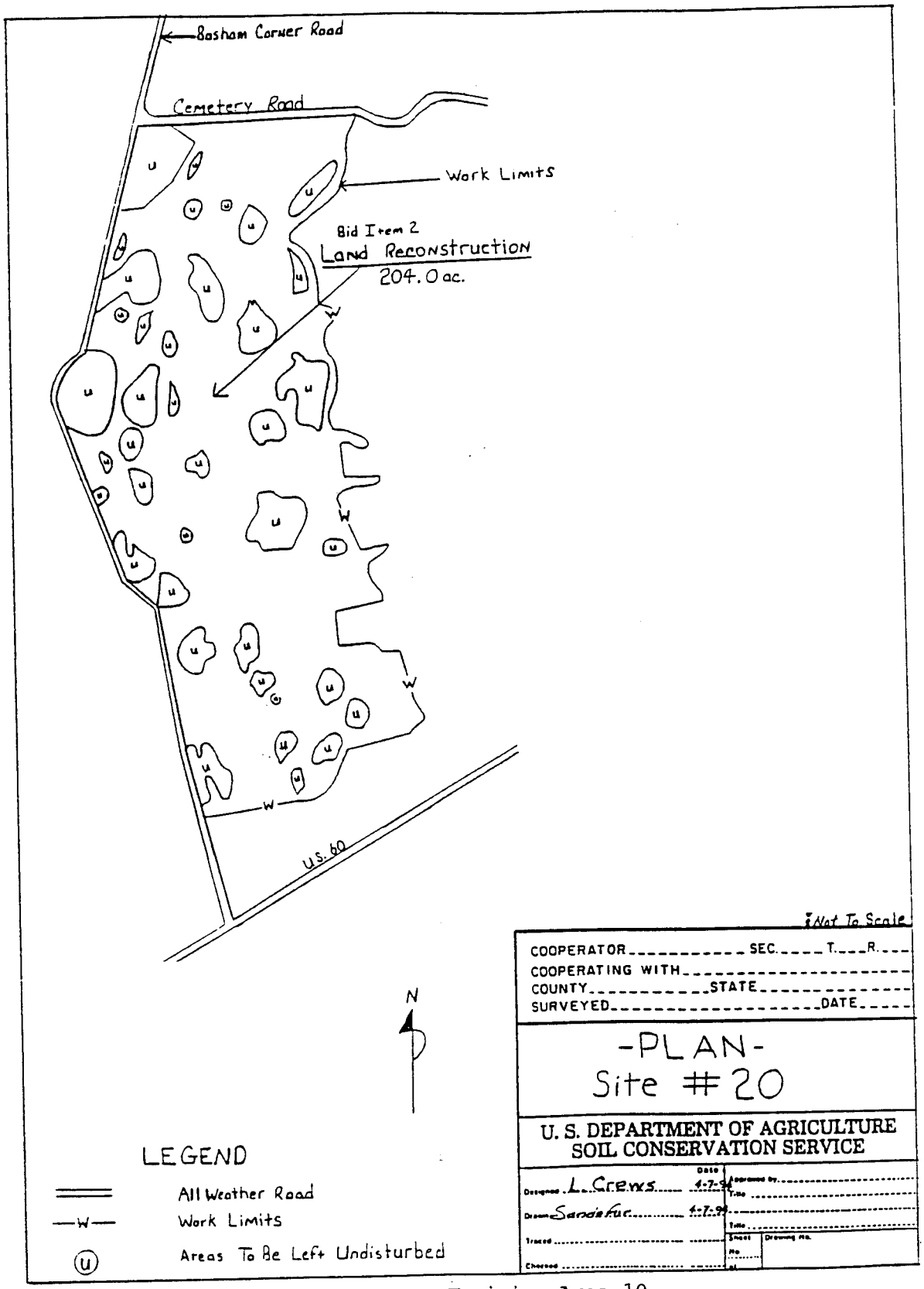


Figure 4. Land Reclamation Map, Training Area 10.

rehab areas had been surveyed previously. Both project areas, therefore, were field inspected in their entirety in the current study.

The scheduled rehabilitation areas are located in the Plain section of the Pennyrile cultural landscape. The areas are primarily on the tops and slopes of dissected ridges and on the karst plain. The southern end of the scheduled rehabilitation area in the TA 9 extends into the floodplain of the Dry Branch. Elevations in the TA 9 project area range from 620 to 770 feet, and in the TA 10 project area from 630 to 720 feet. Soils in the scheduled rehabilitation areas are classified as Crider-Vertrees soil association (U.S.D.A. 1975). The sites on the level areas of TA 9 have Nicholson soils, the slopes have Baxter or Hammack-Baxter soils, and the steep slopes have Riney-Lily Complex soils. All of the sites in TA 10 are on Baxter soils. The soils in the southern end of the project area in TA 9, in the floodplain of the Dry Branch, are composed of Pleistocene lacustrine deposits.

Drainage in the scheduled rehabilitation area in TA 9 flows northward into an unnamed tributary of Otter Creek, westward into the Dry Branch of Otter Creek or into Otter Creek, which flows northward into the Ohio River. Much of the drainage in TA 10 is into sinkholes, and the eastern portion of the area has drainages that flow eastward into Otter Creek.

Gail Pollock, the Integrated Training Area Management (ITAM) coordinator, provided maps that delineated the project boundaries. The surface reconnaissance of the scheduled rehabilitation areas was performed by the Cultural Resource Management Branch staff between April 21, 1994 and August 17, 1994. A total of 193 person hours were spent in the survey of the scheduled rehabilitation areas.

The artifacts from the survey were washed and catalogued by student assistants at the University of Louisville Program of Archaeology. The prehistoric artifacts were analyzed by the Assistant Staff Archaeologist. The historic artifacts were inititially sorted by the student workers and the categories further refined by the Staff Archaeologist. The artifacts and the documentation for this project will be curated at the Program of Archaeology, University of Louisville, on a "permanent loan" basis, under contract number DABT 23-93-C-0093, for curatorial and technical support (copy of contract on file, DPW, Fort Knox, Kentucky). Duplicate copies of the documentation will be stored at the Directorate of Public Works (DPW), U.S. Army Armor Center and Fort Knox, Fort Knox, Kentucky.

II. SETTING AND ENVIRONMENTAL BACKGROUND

O'Malley et al. (1980) have prepared a detailed description of the setting and environmental background of the Fort Knox base as a whole. This section will concentrate on the topographic characteristics of the scheduled rehabilitation areas inspected in the current study.

Both of the scheduled rehabilitation areas lie in the Mississippian Plateau physiographic region of Kentucky (McGrain and Currens 1978:35). The proposed rehabilitation area in TA 9 consists of a karst upland area and a narrow, dissected ridge above a westward bend of Otter Creek, and a portion of the floodplain of the Dry Branch of Otter Creek. The proposed rehab area in TA 10 lies in a karst plain with numerous sinkholes and with drainages that flow eastward into Otter Creek.

The TA 9 rehab area is located west of Pinwheel Road, south of Airstrip Road, and northeast of Otter Creek. It is approximately 1.8 km from northwest to southeast and varies from 200 to 750 m in width. The proposed rehab area begins at Airstrip Road on a northward slope toward Otter Creek, rises abruptly to a large level area, then rises gradually to the crest of a ridge spur. The central portion of the project area is a narrow, flat ridge spur, between drainages to the north and south that flow into Otter Creek, and above a heavily karst area to the south. The south end of the proposed rehab area is a level area in the floodplain of the Dry Branch, approximately 140 feet lower than the narrow ridge in the center of the project area. Most of the north end of the project area has not been used for training in the recent past, thus it is covered with sparse weeds, small bushes, and a few large trees. The narrow ridge had some large trees and an area of small trees and bushes at the southwest end. The ground surface and the shallow sides of sinkholes are largely devoid of vegetation, except for sparse weeds and grass, because of intensive use for tank training and military maneuvers. The steep sides and submerged bottoms of the sinkholes generally have dense concentrations of trees, bushes, and weeds. The floodplain area at the south end has small trees and bushes along the western side and in isolated spots in the middle, possibly around former seeps.

The TA 10 rehab area is essentially a rectangle approximately 1.7 km long north to south and 0.75 km wide east to west. It is located south of Twin Bridge Road (also known as Cemetery Road), east of Basham Road, north of old U.S. 60, and west of Otter Creek. The surface of the area is relatively level, sloping gradually to the north and undulating less than 10 m in elevation throughout most of the project area, however, some sinkholes are as much as 15 m deep. The ground surface and the shallow sides of sinkholes

are largely devoid of vegetation, except for sparse weeds and grass, because of intensive use for tank training and military maneuvers. The steep sides and submerged bottoms of the sinkholes generally have dense concentrations of trees, bushes, and weeds.

III. PREVIOUS RESEARCH

Approximately 30,000 acres of the Fort Knox installation have been surveyed, primarily in cultural resource management (CRM) studies. There are 112 Hunting Areas (HA) on the Fort Knox installation. O'Malley et al. (1980) surveyed approximately one-quarter of each of the 96 hunting areas which did not contain grenade ranges. O'Malley et al. (1980) recorded 415 sites (15Bu295-15Bu410, 15Hd109-15Hd294, and 15Md103-15Md242). Some of these were recorded outside the official survey areas, and were discovered while gaining access to the selected survey areas from the closest access road. Some of the sites are isolated finds. O'Malley et al. (1980) did not formally evaluate the National Register status of any of the sites inspected, although opinions are offered on many of the site forms. The purpose of the O'Malley et al. (1980) study was to provide a preliminary inventory of portions of the installation and to develop a database for the predictive modeling of site locations on the installation, and not to evaluate sites for a task-specific construction project.

Holmberg (1991) prepared an archival study on the four mill sites (15Md164, 15Md176, 15Md185, and Grahamton) recorded by O'Malley et al. (1980) in the Meade County section of the base. Holmberg's (1991) study includes an appendix (Ball 1991a) delimiting a scope of services for the testing of the mill sites. This testing of at least one mill site is scheduled to be performed in 1994 and 1995 through a Legacy grant.

A number of projects have been conducted in conjunction with proposed timber harvests. Bush et al. (1988) revisited 15Bu319 and recorded 15Hd438-15Hd446 and 15Bu485-15Bu491 in their survey of timber areas in HAs 41, 42, and 52. Myers (1990) surveyed 287 acres in HA 95, recording 15Bu495-15Bu502, and describing modern house and garbage dump sites. Mueller (1991) surveyed 270 acres in HA 1, revisiting 15Md11, 15Md152, and 15Md159, and recording 15Md322-15Md325, two historic cemeteries, five prehistoric isolated finds, and three modern structures. Schenian and Mocas (1992) surveyed 600 acres and attempted to relocate and flag previously recorded sites in an additional 300 acres. Their project areas consisted of 14 timber parcels located in HAs 13, 74, 76-78, 81-84, and 88-90. This survey resulted in the recording of 15Hd462-15Hd464, 15Md326, and one isolated find, and the revisiting of 15Hd140. Unsuccessful attempts were made to relocate 15Hd18, 15Hd113, and 15Hd139. Ruple (1992b) revisited sites 15Md152, 15Md153, and 15Md322 in HA 1. Ruple (1992a) revisited sites 15Hd184, 15Hd186, and 15Hd249, and made an unsuccessful attempt to relocate 15Hd248, in order to flag avoidance boundaries around the sites in HA 90 in preparation for logging activities in conjunction with the clearing of the Highway 313 easement.

Ruple (1993a) surveyed all 813 acres comprising HA 4 in preparation for timber harvests.

The improvement of installation facilities has resulted in several CRM studies. Sorensen and Ison (1979) surveyed a proposed telephone building expansion site and access road in the cantonment, recording no sites. Sussenbach (1990) surveyed three weather radar installation sites, in HA 23, discovering one prehistoric isolated find. Ruple (1993b) surveyed approximately 10 acres in the cantonment for a shoreline maintenance project, encountering no sites. Mocas (1993) reported on the examination of approximately 165 acres in and around a proposed landfill and borrow area. Mocas (1994a) surveyed a 69.7 acre area around a proposed sports complex and 2.7 acres around and proposed water tower and along a pipeline in the cantonment (Mocas 1994d), encountering no archaeological sites. Schenian and Mocas (1994b) surveyed 132.2 acres in and around the present Prichard Place housing area as part of the proposed replacement project and recorded only one prehistoric isolated find.

The development, expansion, or improvement of training areas has resulted in a number of CRM studies. Driskell and O'Malley (1979) surveyed the Wilcox Gunnery Range, recording sites 15Bu393-15Bu397. Schenian (1991) surveyed 116 acres in portions of HAs 17, 30, and 41, in conjunction with the Fort Dix realignment, re-examining 15Bu303, and recording 15Bu492, 15Hd459, and two prehistoric isolated finds. Hemberger (1991) also surveyed approximately 405 acres in seven construction sites in HAs 17, 24, 31, 32, 34, and 54, in conjunction with the Fort Dix realignment. This study resulted in the recording of 15Hd461 and 15Bu504, the revisiting of 15Bu299 and 15Bu385, and the unsuccessful attempt to relocate 15Hd274. Hemberger (1991) surveyed a total of 126 acres in four proposed construction areas in the Yano Tank Range, in HA 93, recording 15Hd460, revisiting 15Hd178, 15Hd182, and 15Hd282, and unsuccessfully attempting to relocate previously recorded site 15Hd283. Hemberger (1992) surveyed a 7.5 acre borrow area in HA 24, proposed to be used for the consolidation and improvement of two training ranges, and encountered no sites.

Schenian and Mocas (1993) surveyed a total of 330 acres in 11 rehab areas in TA 3, 6, and 8-11. The survey resulted in the revisiting of 15Md143, 15Md154, 15Md163, and 15Md175, the recording of 15Hd482-15Hd487, 15Md336-15Md342, and five isolated finds, and the unsuccessful attempt to relocate 15Hd17. The Fort Knox CRM staff (Schenian 1994a; Mocas 1994c) surveyed borrow pits for berm repair on the Yano Range, recording no sites in the Schenian 1994a study and 15Bu524-15Bu527 in the Mocas 1994c study. The CRM staff recorded no sites in a survey of a proposed wetlands replacement on the Yano Range (Schenian 1994b), and reported one historic farmstead, 15Hd491, in the proposed rehab area in HA 57 (Schenian 1994c).

In conjunction with land sales, Ball (1987) surveyed 196 acres in the Bullitt County portion of Fort Knox, recording sites 15Bu479-15Bu481 and describing one post-1950, or modern, house foundation. Ball (1991b) also surveyed a 19 acre tract near Radcliff prior to disposal of the tract, recording two historic/modern trash dumps which were not assigned state site numbers. Hale (1981) surveyed the Otter Creek Park, recording 15Md243-15Md303. Portions of Otter Creek Park, now owned by the City of Louisville, were once part of the Fort Knox installation, but were disposed of in the 1970's.

Road construction and improvements have resulted in a number of CRM projects on the military reservation. McGraw (1976) surveyed the proposed U.S. 60 bridge and approaches near Otter Creek park, encountering no sites in a 2.35 mile long corridor which passes through HAs 7-9 and 11 and 12. Fiegal (1982) surveyed the Radcliff Industrial Park access road, including land in HA 15 as well as off the installation. He recorded 15Hd403 and 15Hd404 off the installation, and revisited 15Hd215 and 15Hd272 on the installation. Webb and Brockington (1986) surveyed the 4.75 mile long Kentucky Highway 1638 realignment corridor, which included portions of HAs 5 and 7-10. They revisited sites 15Md176, and 15Md182-15Md185, and recorded 15Md306, 15Md307, and 15Md309. Sites 15Md176, 15Md182, 15Md183, and 15Md307 were all parts of the former town of Garnettsville. The latter three sites were tested (Wheaton 1982), but 15Md176 was not tested because it fell outside the 1638 realignment easement.

DiBlasi (1986) surveyed 14 alternative alignments of the approximately 20 km (12.4 miles) long Kentucky Highway 313 corridor, which includes portions of HAs 80-83 and 90, as well as land outside the installation. A total of 27 sites (15Hd406-15Hd430 outside the installation, and 15Hd135, 15Hd184, 15Hd186, 15Hd248, 15Hd249, 15Hd253, 15Hd431, and 15Hd432 on the installation), some previously recorded, were located in the survey corridor. Hixon (1992) tested 15Hd423 and 15Hd426, and archaeologists from Wilbur Smith Associates tested six sites on the installation, including 15Hd249 and 15Hd253 (Fenton 1993: personal communication to Schenian).

A recent survey of proposed borrow pits for the Yano-Cedar Creek Road improvements (Mocas 1994b) resulted in the recording of 15Hd489 and 15Hd490, the revisiting of 15Hd120 and 15Hd121, and the unsuccessful attempt to relocate 15Hd246. Schenian and Mocas (1994a) located prehistoric site 15Hd488 during a survey of 1.7 acres of proposed borrow area for the Cedar Creek Airstrip. Mocas (1994e) found no sites in the survey of the area surrounding a culvert replacement along Mud Run.

In addition to the CRM projects, several sites have been recorded on the military reservation in non-CRM contexts.

Funkhouser and Webb (1932) published a catalog of archaeological sites in the state, with the information gained primarily through correspondence with amateur archaeologists, collectors, and local historians, and included the description of two mounds or mound groups (15Md10 and 15Md11) now on the military reservation. Lee Hanson recorded 15Hd17 and 15Hd18, while attending ROTC training camp at Fort Knox in 1961 (Hanson 1961a, 1961b; Dr. R. Berle Clay 1991: personal communication). The wife of a soldier stationed at Fort Knox partially excavated 15Hd273, a mound in HA 6, in 1955 (Anonymous 1955).

Of greatest relevance to the current survey is the O'Malley et al. (1980) survey of portions of HAs 8-12, adjoining or near the current project areas and Hale's (1981) survey of Otter Creek Park. A small portion of the O'Malley et al. (1980) survey may have overlapped with a portion of the current project area immediately adjoining Basham Road in HA 11 of TA 10, but no sites were recorded in the overlapping strip. The O'Malley et al. (1980) survey in HAs 8-12 and the Hale (1981) study recorded a very high density of sites in the uplands near Otter Creek. No sites had been recorded in the current project areas prior to the fieldwork, however. No standing structures listed on or eligible for listing on the National Register of Historic Places are located in or immediately adjacent to the current project area. No archaeological sites listed on the National Register are located in or immediately adjacent to the current project area, although many of the sites recorded near the current project area must be considered potentially eligible for the National Register because they have not been adequately assessed by the current standards of the profession.

IV. SURVEY PREDICTIONS

Based on previous archaeological research in the area, the history of settlement, and the environmental setting of the project area, the following results were expected:

1) Both the TA 9 and TA 10 project areas consist of former privately owned properties which were acquired by the Army in the 1940's. Although not acquired until the 1940's, the TA 9 project area historic property boundaries and structure locations were depicted on the 1919 land acquisition maps, providing detailed information on the number of structures and the layout of farmsteads in this project area. The TA 10 project area is depicted only on the land acquisition maps from the 1940's, which depict the property boundaries, but not specific structural locations. This information provides a basis for the location and interpretation of potential historic sites.

2) Some former property owners opted to relocate their structures to their new properties off the installation, and the Army removed most pre-installation standing structures for liability reasons. Therefore, few historic structural ruins are expected.

3) Some of the survey areas consist primarily of steep ridge slopes and sinkhole sides that are unlikely habitation or activity loci.

4) The rehab areas on the tops and upper slopes of ridges have high potential for habitation in areas where water was readily accessible.

5) There is a high probability of habitation sites near Otter Creek and its drainages.

6) Studies elsewhere indicate frequent occupation and activity areas around sinkholes, however, the presence of abundant flowing surface water in the vicinity lessens the importance of sinkholes as habitation loci.

7) Historic sites frequently also have prehistoric components, suggesting that some topographic characteristic made the location desirable to both prehistoric and historic inhabitants.

8) Most of the proposed rehab areas have been used for tank training areas, in some cases for decades. Sites found in these areas are likely to be wholly or partially disturbed.

9) Previous archaeological research in the Otter Creek drainage has demonstrated a very high density of sites in the uplands adjoining or near Otter Creek. Approximately one site or isolated find was expected for each 10 acres of project area, based on these previous studies.

V. FIELD METHODS

In general, the proposed rehabilitation areas were systematically walked in transects at paced 10 m intervals. Most of the proposed rehab areas were or are used for tank training and the ground surface is eroded well into the subsoil. Visibility in the majority of both rehab areas was very good. In most of the project area ground surface visibility was generally 100 percent, and only very limited areas had surface visibility of less than 50 percent. If the ground surface had been obscured by vegetation for greater than 10 m within a transect, then a shovel probe would have been excavated. No areas were encountered in either project area, however, which could not be adequately inspected via walkover at the site discovery level either through inspection of the ground surface or of exposed cutbanks adjoining tank trails or gullies. The majority of the vegetated areas which will be avoided by the contractors conducting the rehabilitation work in the project areas were not systematically inspected because they are sinkholes with deep standing water.

Upon discovery of archaeological materials, the ground surface of the area around the find was walked in transects spaced at 5 m intervals, until no additional materials were recovered for a distance of 20 m within a transect. Figures C-1 through C-42 in Appendix C depict the locations and plans of the cultural resources encountered in the proposed rehabilitation areas. The site plans show the testing methods and salient features of these sites in greater detail.

No features or potential features were observed during the walkover of sites 15Md352, 15Md353, 15Md355, 15Md357, 15Md358, 15Md360, 15Md361, 15Md363, 15Md365, and 15Md367-15Md374, or any of the isolated finds. These sites and the isolated finds were eroded or deflated to subsoil. In view of the absence of evidence of features, it was not necessary to excavate shovel probes. The remainder of the sites had patches of topsoil and/or areas of dense vegetation which precluded examination of the surface for potential features, and these were shovel probed. Only the southwest end of the narrow ridge spur in TA 9 that contained 15Md359 had sufficient vegetation to necessitate shovel testing to determine the extent of the site. On the other sites shovel probed, the horizontal site boundaries could be determined by walkover, but shovel probes were excavated to determine the vertical extent of deposits.

Each shovel probe excavated was approximately 30 cm square at ground surface and excavated to a depth of at least 30 cm, or until sterile subsoil or bedrock was encountered. The walls of each STP were scraped and inspected for evidence of archaeological materials or deposits. The fill from each shovel probe in the vicinity of potential sites

was screened through one-quarter inch hardware cloth, if feasible, prior to backfilling of the probes. If the soil could not be screened (due to extreme wetness, clay content, or similar circumstances), it was trowel sorted for cultural materials prior to backfilling.

In summary, the archaeological investigation of the proposed rehabilitation areas resulted in the recording of 30 new sites and 10 isolated finds. Sites 15Md347 through 15Md361 and TA9-IF2 were recorded in the proposed rehab area in TA 9, and sites 15Md362 through 15Md376 and TA10-IF1 through TA10-IF9 were recorded in the proposed rehab area in TA 10. (The flake assigned field designation TA9-IF1 was determined to be of natural origin after it was cleaned, and was discarded, therefore TA9-IF1 no longer exists.)

VI. ARTIFACT TYPOLOGY AND MATERIALS RECOVERED

The following paragraphs summarize the artifact typologies used in the sorting and analysis of the artifacts recovered during this project, and describe specific artifacts recovered in greater detail. The distribution of prehistoric artifacts by site is summarized in Table 1, and the distribution of historic artifacts by site is summarized in Table 2. All of the diagnostic prehistoric artifacts and a representative sample of other classes of prehistoric tools are depicted in Figures 5 through 14. Selected historic artifacts are shown in Figures 15 and 16.

Prehistoric Artifact Typology

Projectile Point

A projectile point is a bifacially worked chipped stone tool which is generally assumed to have been hafted for use as a hunting implement, such as a spear head or arrowhead, but may have an alternative or additional use as a cutting implement. A total of 16 points or point fragments were recovered in this project.

Early Archaic Kirk Corner Notched points (circa 7500-6900 B.C.) (Justice 1987:71-73) were recovered from 15Md353 (Figure 9) and 15Md375 (Figure 14), and a Kirk Serrated point (circa 6900-6000 B.C.) (Justice 1987:82-85) was found at 15Md375 (Figure 14). A Middle Archaic Raddatz Side Notched point (circa 6000-3000 B.C.) (Justice 1987:64, 67-68) was found on 15Md353 (Figure 9).

A Late Archaic Matanzas point (circa 3700-2000 B.C.) (Justice 1987:119-124) was found at 15Md348 (Figure 5), and a possible McWhinney Heavy Stemmed point (circa 4000-1000 B.C.) (Justice 1987:137-139) and a Terminal Archaic/Early Woodland Kramer point (circa 1000-500 B.C.) (Justice 1987:184-187) were recovered from 15Md349 (Figure 6). A local informant (George Lancaster of Vine Grove, Kentucky) showed the authors a Late Archaic McWhinney Heavy Stemmed point collected from 15Md351.

An Early Woodland Dickson Cluster contracting stemmed point (Figure 13), possibly a Cypress Stemmed (circa 1000-300 B.C.) or Little Bear Creek point (circa 1500-500 B.C.) (Justice 1987:195-198), was found at 15Md366. Middle Woodland Snyders points (circa 150 B.C.-A.D. 200) (Justice 1987:201-204) were recovered from 15Md348 (Figure 5) and 15Md375 (Figure 14).

Two non-diagnostic projectile point fragments were recovered from 15Md375. One non-diagnostic projectile point

Table 1. Inventory of Prehistoric Artifacts.

	Md 347	Md 348	Md 349	Md 350	Md 351	Md 352	Md 353	Md 354	Md 355	Md 357	Md 358	Md 359	Md 360	Md 361	Md 362	Md 363	Md 365	Md 366	Md 368	Md 369	Md 371	Md 372	Md 373	Md 375	Md 376	TA9 IF2	TA 10 IF1	TA 10 IF2	TA 10 IF3	TA 10 IF4	TA 10 IF5	TA 10 IF6	TA 10 IF7	TA 10 IF8	TA 10 IF9	TOTAL
Projectile point	0	2	2	0	1	0	2	0	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	16
Biface	0	1	0	0	8	1	1	0	1	0	0	0	0	0	1	1	0	2	1	2	0	0	1	10	0	0	1	0	0	0	0	0	0	0	0	31
Scraper	0	0	1	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1	0	0	0	1	6	0	0	0	0	0	0	0	0	1	0	0	13
Uniface	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	6
Utilized debitage																																				
Secondary flake	0	0	2	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	6
Tertiary flake	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6	0	0	0	0	0	0	1	0	0	0	0	11
Chert shatter	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4
Unutilized debitage																																				
Primary flake	0	0	0	0	3	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	9
Secondary flake	1	10	20	3	41	0	1	4	4	11	4	3	3	0	5	0	0	3	0	25	0	2	3	121	2	0	0	0	0	1	0	0	0	0	0	267
Tertiary flake	2	24	65	5	50	7	4	7	6	7	4	3	0	1	5	1	2	3	1	14	1	0	7	199	3	1	1	1	0	0	0	1	0	0	2	427
Chert shatter	0	24	55	6	63	3	6	14	6	8	1	2	0	2	4	1	1	11	1	14	0	2	6	205	3	0	0	0	0	0	0	0	0	1	0	439
Microflake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	6
Core/battered cobble	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	7
Hammerstone	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	3	61	148	15	168	12	15	26	18	33	13	9	4	3	15	4	3	22	4	55	1	6	20	565	8	1	2	1	1	1	1	1	1	1	2	1243

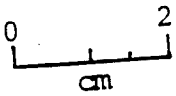
Table 2. Inventory of Historic Artifacts.

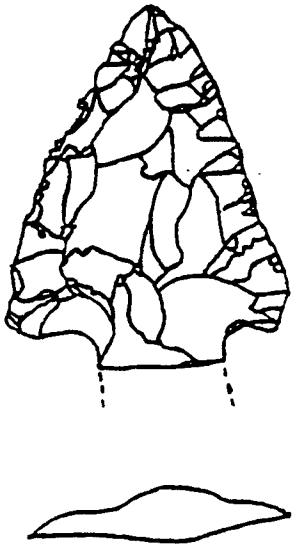
	Md 347	Md 348	Md 349	Md 356	Md 362	Md 364	MD 367	Md 370	Md 371	Md 374	Total
KITCHEN GROUP											
Ceramic											
Coarse Earthenware											
Redware	0	0	0	1	0	1	0	0	0	0	2
Orangeware	0	1	0	0	0	0	0	0	0	0	1
Stoneware											
Buff	0	0	0	16	0	3	6	2	0	6	33
Gray	0	0	0	10	0	1	1	1	0	2	15
Red	0	0	0	3	0	0	0	0	0	0	3
Ironstone, white	0	0	0	13	0	4	15	2	4	5	43
Refined Earthenware											
Whiteware	1	0	1	34	1	3	13	0	1	4	58
Semi-porcelain	0	0	0	4	2	0	1	0	0	1	8
Porcelain	0	0	0	0	1	0	2	0	0	1	4
Glass, bottle											
Amber	0	0	0	1	0	5	2	1	0	0	9
Amethyst, solarized	0	0	0	7	0	2	22	1	1	3	36
Aqua	0	0	0	18	0	9	8	0	6	4	45
Cobalt	0	0	0	0	0	1	5	1	1	1	9
Clear	0	0	0	25	0	3	8	1	1	2	40
Ice blue	0	0	0	2	0	0	2	0	0	0	4
Green	0	0	0	6	0	1	4	0	0	2	13
Glass, dish											
Clear	0	0	0	2	0	0	0	0	0	0	2
Milk glass	0	0	0	0	0	2	3	0	0	0	5
Pink	0	0	0	1	0	0	0	0	0	0	1
Glass, lid liner	0	0	0	7	0	2	1	0	0	0	10
Metal--zinc lid	0	0	0	1	0	0	0	0	0	0	1
Kitchen Group Total	1	1	1	151	4	37	93	9	14	31	342
ARCHITECTURAL GROUP											
Brick	0	0	0	0	0	1	0	0	0	0	1
Glass, flat (window)											
Clear	0	0	0	2	0	0	0	0	2	0	4
Green	0	1	0	4	0	1	16	0	0	2	24
Indeterminate	0	0	0	0	0	0	5	0	0	0	5
Nail/spike											
Square cut	0	0	0	3	0	2	0	0	0	0	5
Wire	0	0	0	1	0	1	0	0	0	0	2
Wire or wire nail	0	0	0	11	0	0	0	0	0	0	11
Architectural Group Total	0	1	0	21	0	5	21	0	2	2	52

Table 2. Inventory of Historic Artifacts (continued).

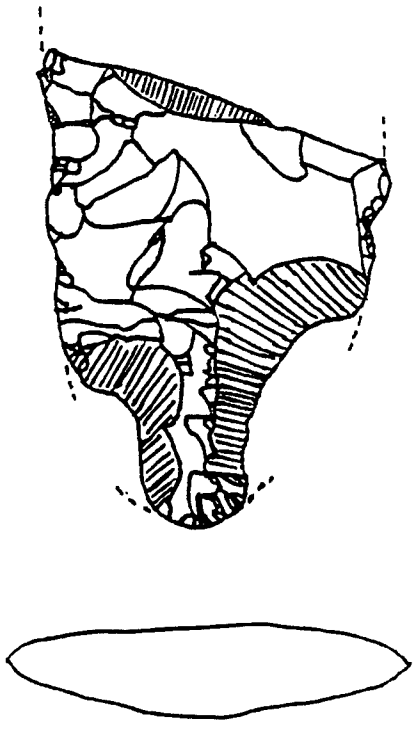
	Md 347	Md 348	Md 349	Md 356	Md 362	Md 364	Md 367	Md 370	Md 371	Md 374	Total
FURNITURE/FURNISHINGS GROUP											
Glass, furniture											
Kerosene lamp chimney	0	0	0	0	0	2	2	0	0	0	4
Table top	0	0	0	0	0	0	0	1	0	0	1
Vase	0	0	0	0	0	0	1	0	0	0	1
Furniture Group Total	0	0	0	0	0	2	3	1	0	0	6
CLOTHING GROUP											
Button, tin	0	0	0	1	0	0	0	0	0	0	1
Clothing Group Total	0	0	0	1	0	0	0	0	0	0	1
TRANSPORTATION GROUP											
Horseshoe	0	0	0	1	0	0	0	0	0	0	1
Transportation Group Total	0	0	0	1	0	0	0	0	0	0	1
ACTIVITIES GROUP											
Misc. hardware	0	0	0	1	0	0	0	0	0	0	1
Activities Group Total	0	0	0	1	0	0	0	0	0	0	1
TOTAL HISTORIC MATERIALS	1	2	1	175	4	44	117	10	16	33	403

Matanzas projectile point



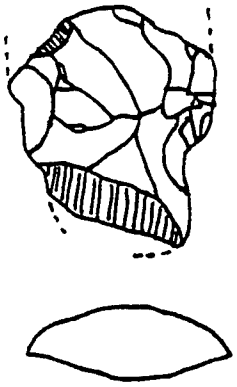


Snyders projectile point

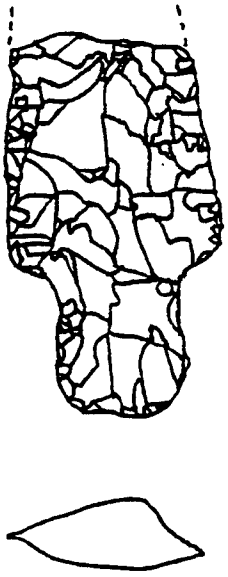


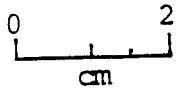
biface/preform fragment

Figure 5. Tools from 15Md348.



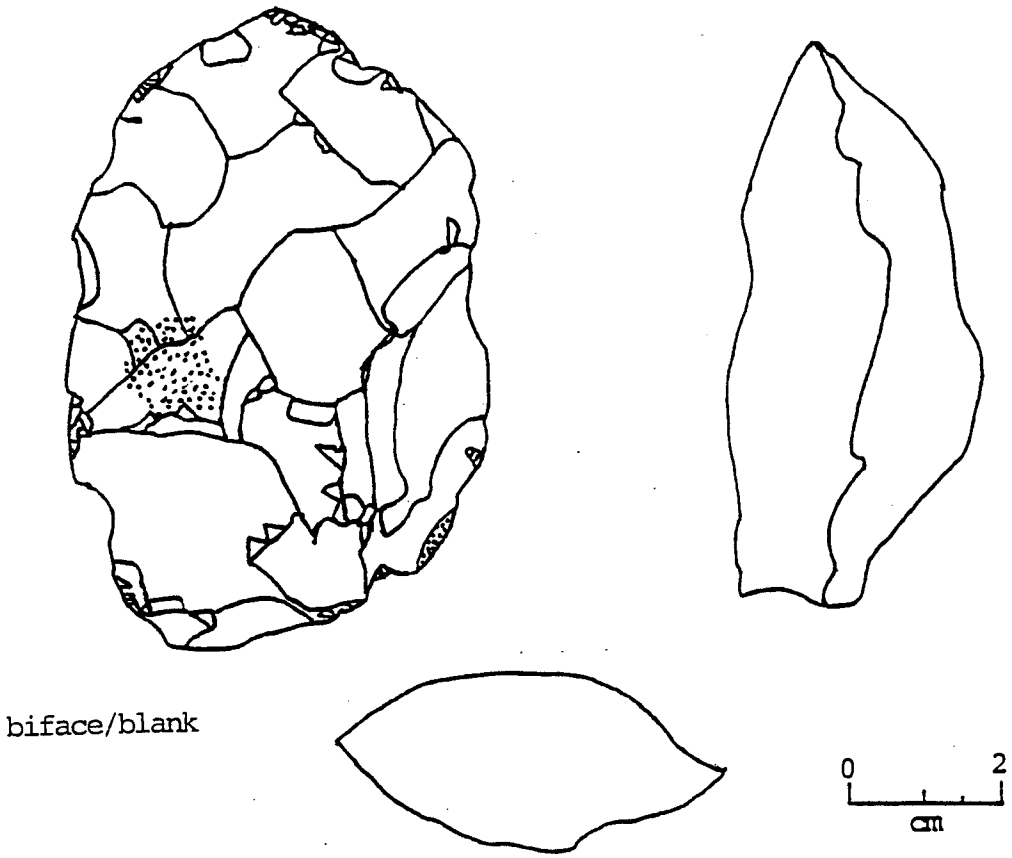
McWhinney projectile point





Kramer projectile point

Figure 6. Tools from 15Md349.



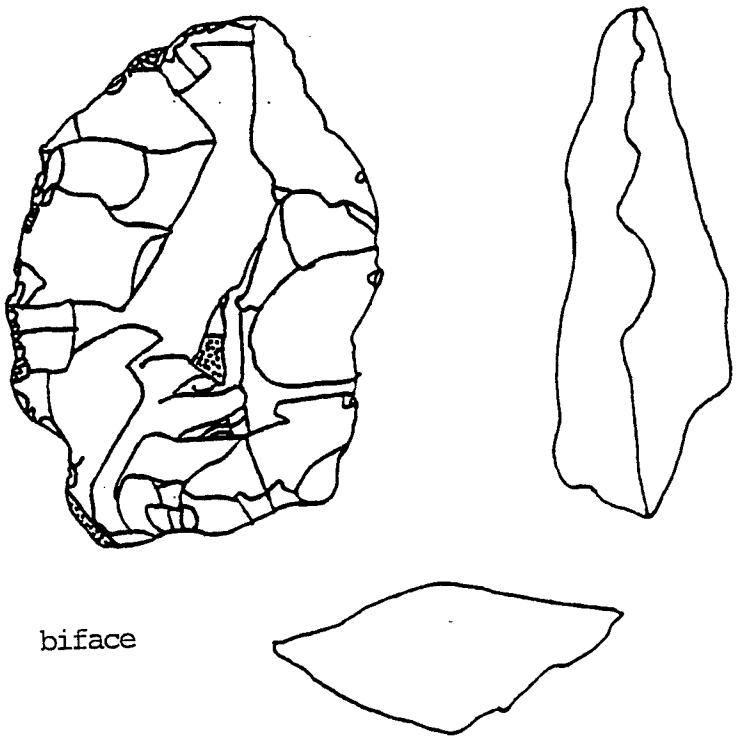
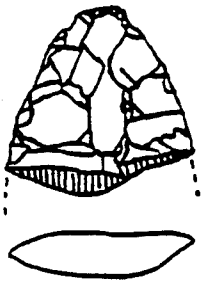
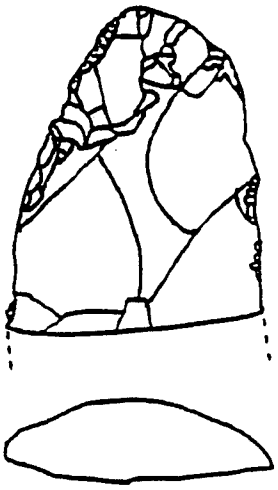


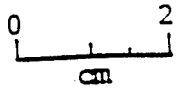
Figure 7. Tools from 15Md351.

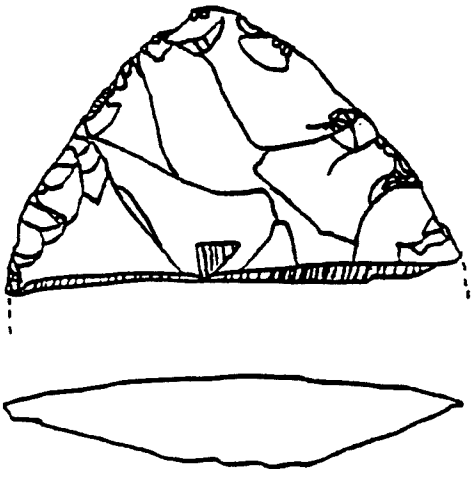


knife/biface,
distal fragment

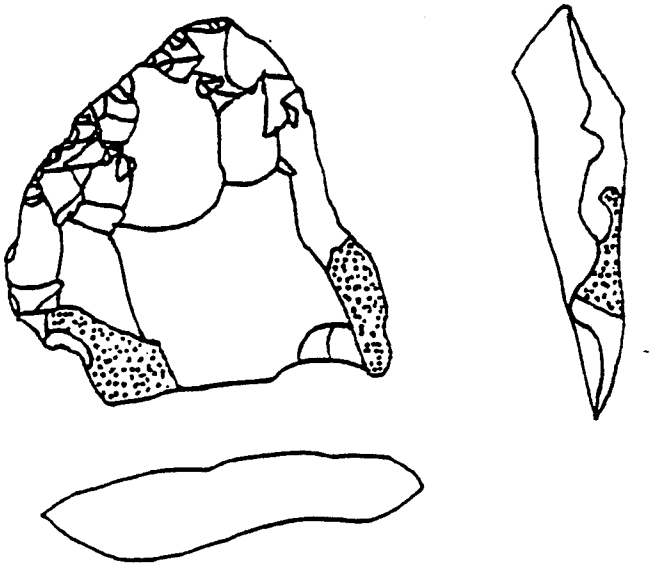


biface,
distal fragment





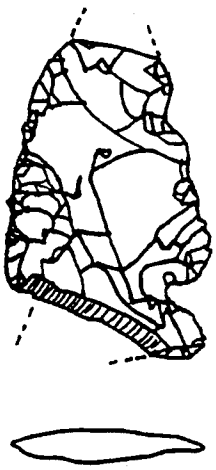
biface,
distal fragment



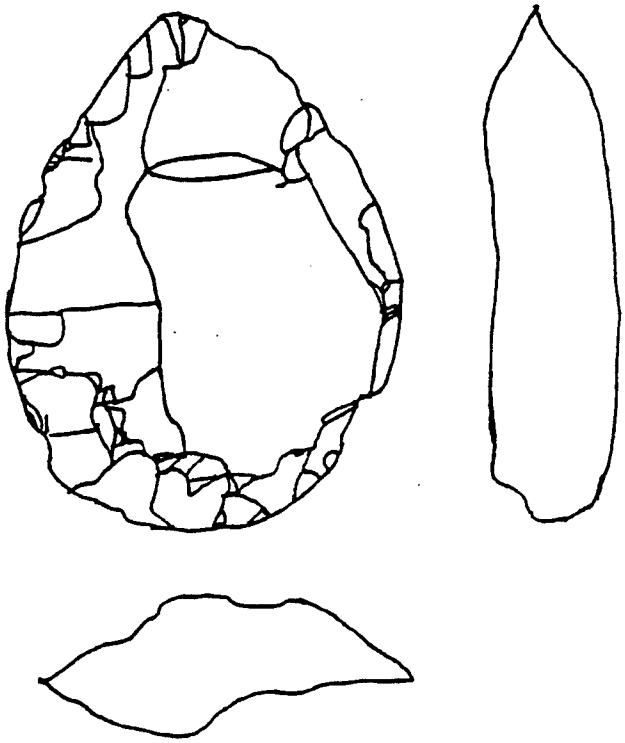
biface,
distal fragment

Figure 8. Tools from 15Md351.

Raddatz Side Notched projectile point



Kirk Corner Notched
projectile point



biface/preform

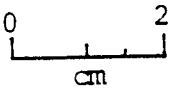
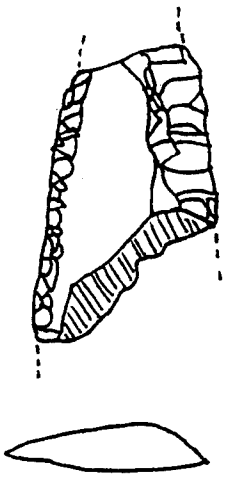
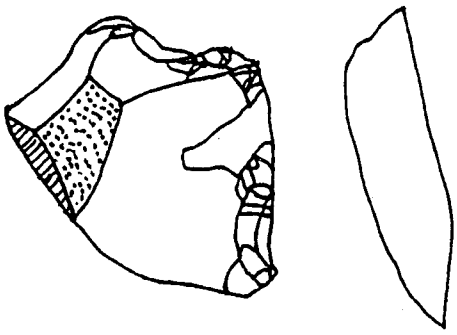


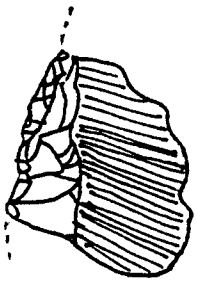
Figure 9. Tools from 15Md353.

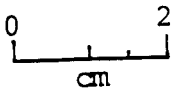


bilateral, bifacial knife

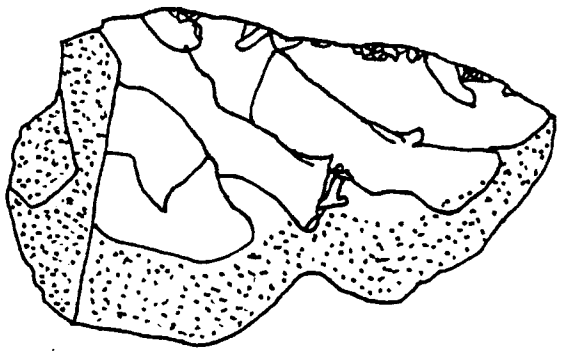


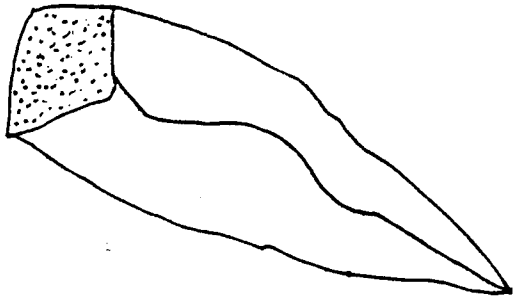
spokeshave/scraper or knife





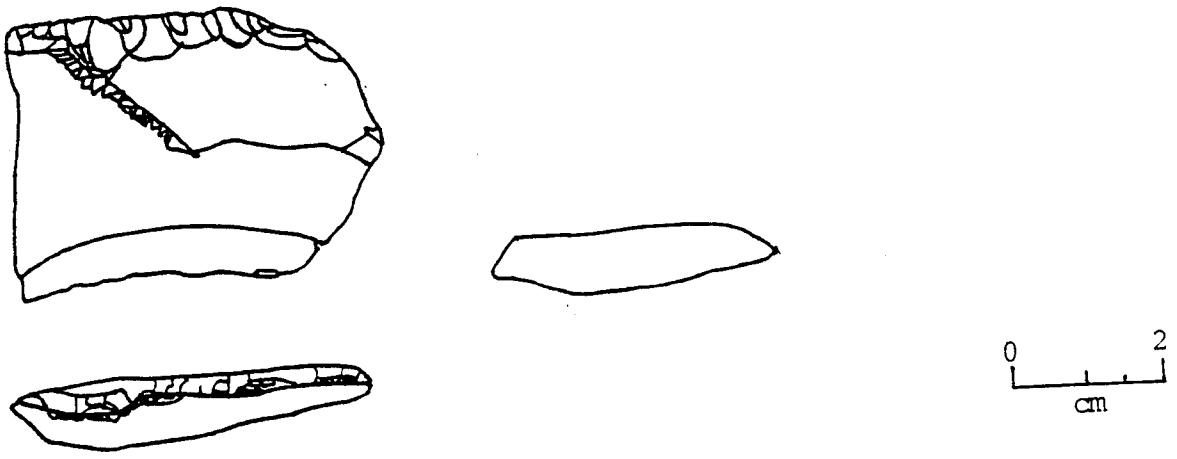
scraper fragment





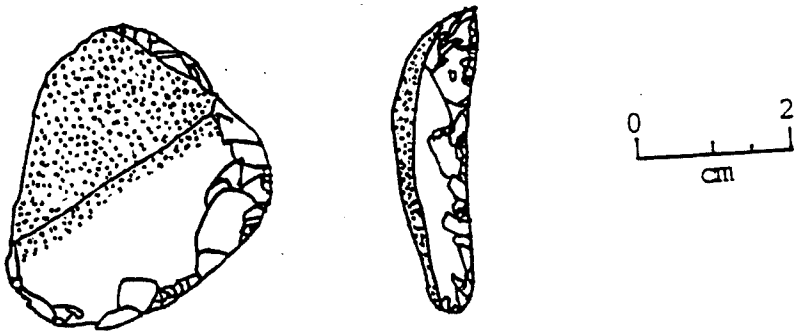
unifacial knife

Figure 10. Tools from 15Md357.



unilateral, unifacial knife (on blade)

Figure 11. Tool from 15Md358.

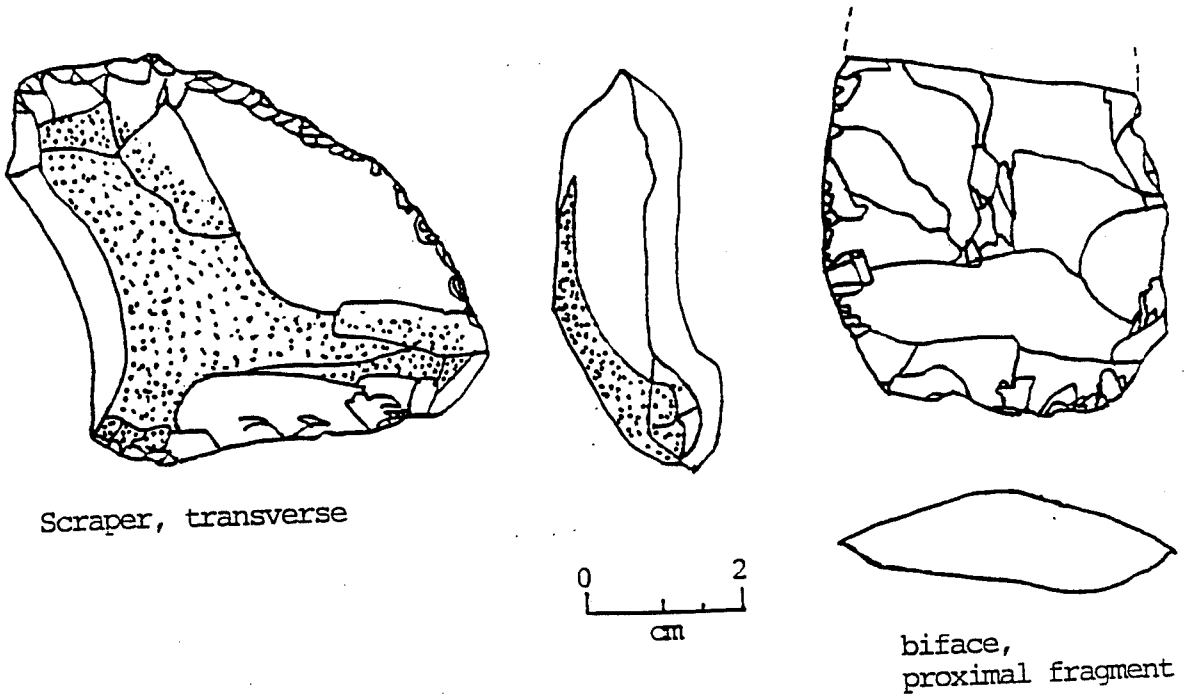


scraper (semicircular)

Figure 12. Tool from 15Md360.

Early Woodland Contracting Stemmed
projectile point
(possibly Cypress Stemmed or Little Bear Creek)

Figure 13. Tool from 15Md366.



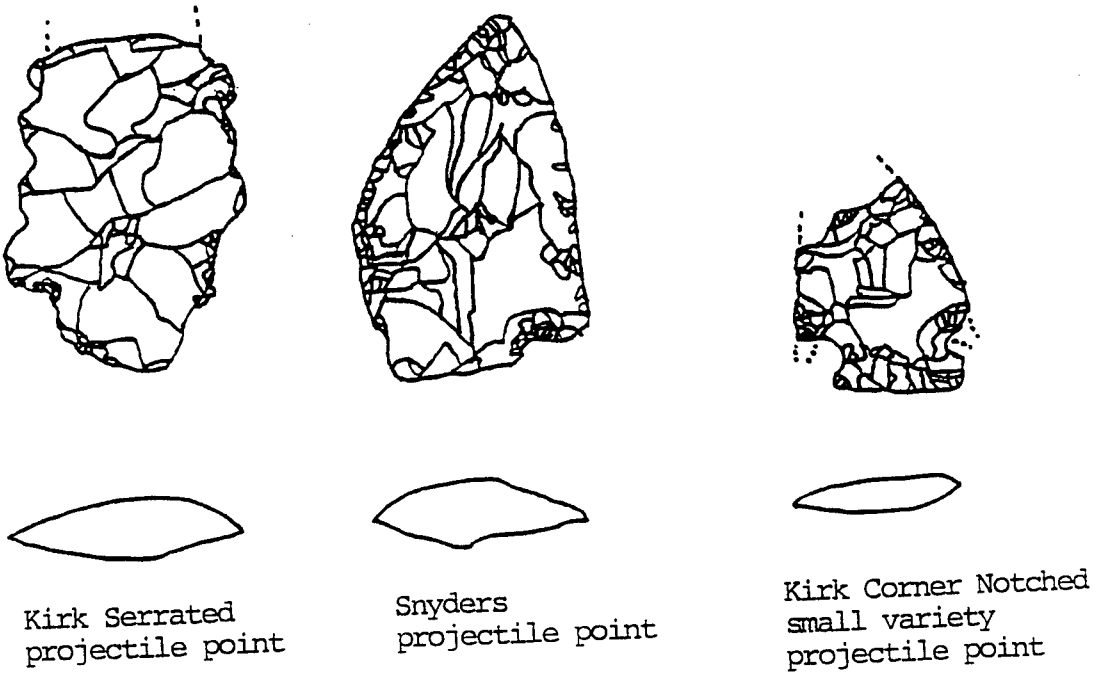
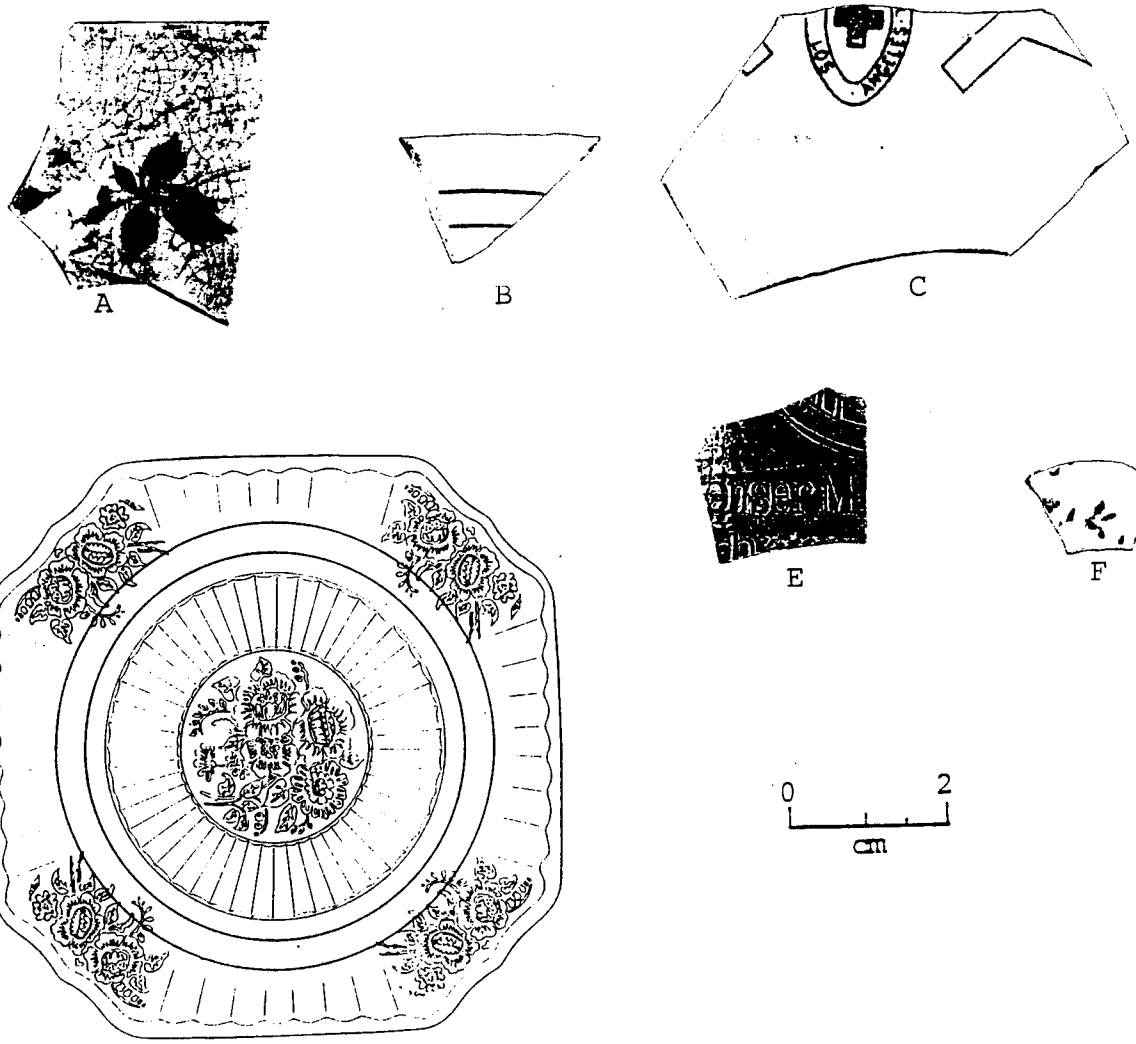


Figure 14. Tools from 15Md375.



Source: Luckey and Burris 1986:119
not to scale

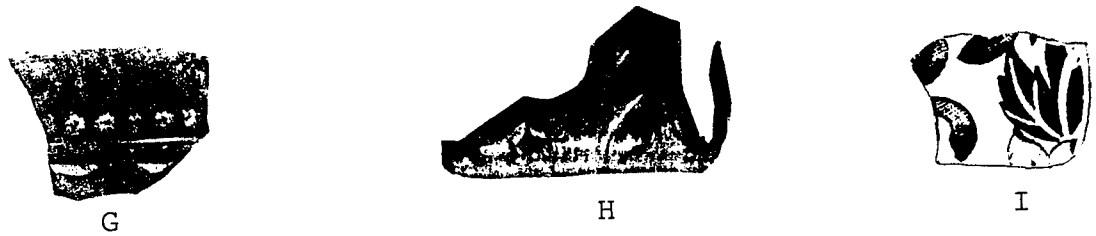


Figure 15. Historic Ceramic and Glass Artifacts. (A-D: 15Md356; E-F: 15Md364; G-H: 15Md367; I: 15Md374)

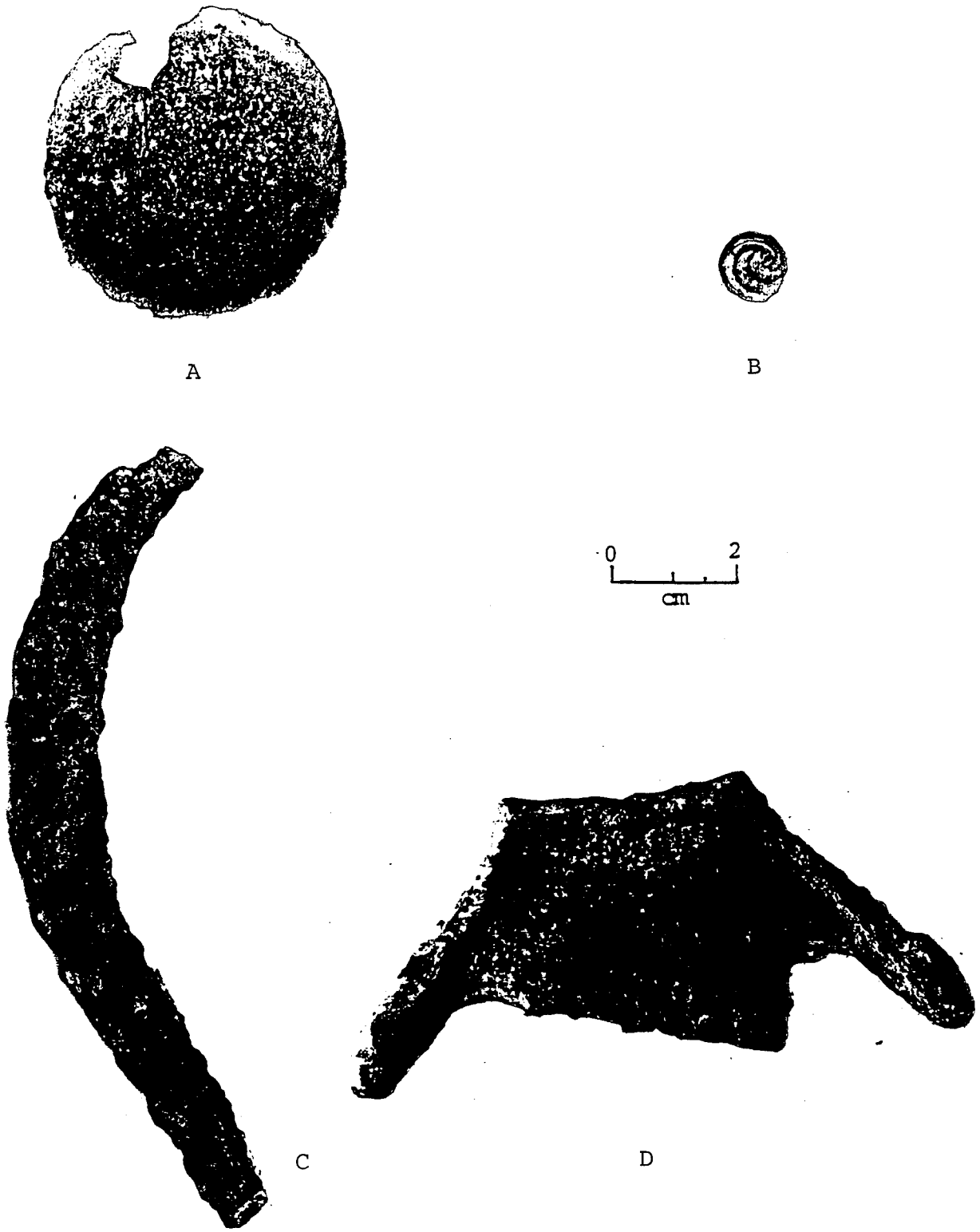


Figure 16. Metal Artifacts from 15Md356.

fragment was recovered from each 15Md351, 15Md355, 15Md357, and 15Md358.

Biface

A biface is a chipped stone tool which has had flakes removed from two opposite sides along one or more edges. There is considerable variety in the size, shape, and precision of chipping of bifaces, depending upon the stage of manufacture and intended use. These implements may be quarry blanks or tool blanks, preforms for projectile points or other tools, or cutting or chopping tools. Two bifaces (Figure 7) and six fragments (Figure 8) were recovered from 15Md351. Site 15Md375 had one biface (Figure 14) and nine fragments. Two biface fragments were collected from each 15Md366 and 15Md369. One biface/preform was recovered from 15Md353 (Figure 9). One biface fragment was found at each 15Md348 (Figure 5), 15Md352, 15Md355, 15Md362, 15Md363, 15Md368, 15Md373, and isolated find TA10-IF1.

Scraper

A scraper is a chipped stone tool formed by the removal of a continuous series of steep flakes from a single surface of a tool. Those tools with flakes removed along one or both sides are referred to as side scrapers, and those with flakes removed from the end of the tool are labeled end scrapers. Occasionally, one or both sides and the end were used for scraping. Tools with flakes removed from the intersection of the end and side are referred to as oblique-transverse scrapers.

One side scraper was recovered from 15Md349, one scraper with a semicircular working edge was found at 15Md360, one side scraper with additional use flakes on the end was recovered at 15Md368, and one end scraper was found at 15Md373. One scraper and one spokeshave/scraper or knife were recovered from 15Md357 (Figure 10). Two end scrapers, two side scrapers, and two scrapers with oblique-transverse scraping edges were collected from 15Md375.

Uniface

A uniface is a chipped stone tool formed by the removal of flakes from only one surface, along one or more edges, and, generally, it is made on a flake. Unifaces are believed to have functioned primarily as cutting tools. Two unifacial knives were recovered from each 15Md357 (Figure 10) and 15Md358 (Figure 11). One unifacial knife was collected from each 15Md373 and 15Md375.

Chert Debitage

Chert debitage is a category used to describe the material generally created as a by-product in the manufacture of more formally defined chipped stone tools. Chert debitage may be further divided into the categories of flakes, blocky chert pieces, microflakes, and chert shatter. It may also be classified by stage of manufacture and by evidence for use as an informal, or expedient, tool. The following criteria have been applied to sort the chert debitage collected in this study:

1) Flakes are defined by the presence of a striking platform and bulb of percussion. Concentric rings or ripple marks on the ventral surface, and feather terminations may also be present. Flakes are classified as primary flakes if 90 percent or more of the dorsal surface (the side opposite the bulb of percussion) is covered by cortex or rind; as secondary flakes if one to 90 percent of the dorsal surface is covered by cortex; and as tertiary flakes if no cortex is present on the dorsal surface.

2) A chert piece is classified as shatter if it exhibits flake-like characteristics, but is insufficiently complete to classify the piece as a primary, secondary or tertiary flake. Usually, the striking platform is missing.

3) A blocky chert piece is an angular chert piece lacking flake-like characteristics, and lacking evidence of having served as a core.

4) A microflake is a complete flake that is less than 6 mm in length and is, generally, the product of fine retouch or resharpening of tools.

5) A piece of chert debitage is classified as utilized if at least three contiguous small flakes have been removed from one or more edges by use rather than retouch.

5) A piece of chert debitage is classified as unutilized if it exhibits no evidence of the removal of small flakes through use.

Core/Tested Cobble

A core is a chert cobble or tabular piece of chert from which flakes have been removed for later modification or use as tools. A tested cobble is a piece of chert raw material that was flaked to ascertain its suitability for use in manufacture of tools. These two types of artifacts are often indistinguishable and are grouped in this discussion. The

assemblages from 15Md353 and 15Md357 each include one tested tabular block of chert. Site 15Md363 yielded one tested cobble of nodular chert, and 15Md375 had one tested cobble and one core. One core was recovered from 15Md349. Isolated find TA10-IF3 is a tested tabular block of chert.

Hammerstone

A hammerstone is a cobble or other piece of rock with one or more battered areas on the periphery that suggests its use for percussion. One chert hammerstone was recovered from 15Md373.

Historic Artifact Typology

South (1977:95-95) defined a system of artifact classification based on function. Under South's system, for example, ceramics and curved glass are kitchen group artifacts, flat glass less than 10 mm thick and nails are architectural group artifacts, and horseshoes are transportation group artifacts.

KITCHEN GROUP

Ceramics

Historic ceramics are divided into coarse earthenware, stoneware, ironstone, refined earthenware, semi-porcelain, and porcelain. Coarse and refined earthenware have the most porous paste, stoneware and ironstone have less porous paste, and semi-porcelain and porcelain have the least porous paste. Each of these broad categories is further divided into more specific types based on paste texture and color, glaze characteristics, and decoration (Maples 1991).

Coarse earthenware. Three coarse earthenware sherds were collected from the project sites. Redware is most common from 1750 to 1870 (Ketchum 1983:51), although terra cotta and non-kitchen redware vessels have been made to the present date. One orangeware sherd with brown glaze exterior and a bisque interior was recovered from 15Md348. It is possibly from a flower pot. One redware sherd, with brown glaze interior and white glaze exterior, was recovered from 15Md356. One redware sherd, with brown glaze interior and exterior, was recovered from 15Md364.

Stoneware. A total of 51 stoneware sherds were recovered in this project. Stoneware cannot be dated to a more accurate range than nineteenth to twentieth century and vessels frequently lacked makers marks.

Fifteen buff, nine gray, and three red stoneware sherds were collected from the surface of 15Md356. One gray paste stoneware sherd was recovered from STP 1 and one buff stoneware sherd was recovered from STP 3 at 15Md356. Of the ten gray paste sherds, four are probably from the same vessel or similar vessels. Of these four sherds, one rim sherd has a light gray glaze interior and exterior and a bisque rim (the shoulder is not bisque), one body sherd has light gray glaze interior and exterior and part of a handle, and two body sherds have light gray glaze interior and exterior. Another sherd has light gray glaze exterior and brown glaze interior. One has dark gray glaze exterior and brown glaze interior. One has brown glaze exterior and a bisque interior. One has a brown glaze exterior and a bisque rim and shoulder. One has a brown and tan striped exterior and a brown interior. The gray paste sherd from STP 1 has brown glaze exterior and interior.

Most of the 15 buff paste stoneware sherds from the surface of 15Md356 probably derive from separate vessels. One has a brown glaze interior and exterior and bisque rim and shoulder. One body sherd has brown glaze interior and exterior. One is from the base of a large bowl with white glaze interior and exterior. One has off-white glaze interior and exterior and a bisque rim and shoulder. One has off-white glaze interior and exterior and a bisque shoulder. One has off-white to light gray glaze interior and exterior and relief decoration on the exterior in a barrel or basket appearance. One has tan glaze exterior and off-white glaze interior. Two have light gray exterior and brown glaze interior. One has light gray exterior and brown interior with a bisque rim. One has tan glaze exterior and brown interior with relief decoration on the exterior creating a barrel or basket pattern and a slight handle. One has a light reddish brown glaze on the interior, exterior, and rim with relief decoration in a barrel pattern on the exterior. One massive rim has bands of dappled gray, brown, and tan with a bisque rim and brown glaze interior. Another massive body sherd has dappled gray exterior and brown glaze interior. One has brown glaze interior and white glaze exterior with a reddish brown stripe. The buff sherd from STP 3 has off-white glaze interior and exterior.

Three red paste stoneware sherds (one base and two body) were collected from 15Md356. These have brown lead glaze on the exterior and white glaze on the interior and are obviously from a single vessel. The two body sherds refit. The three are from a cylindrical stein or other similar vessel. The base sherd is incised "...EYE". This is a portion of the mark of Buckeye Stoneware, Crooksville, Ohio, and predates 1893 (Lehner 1988:63). All products made by this firm used red clay, unusual for stoneware, in combination with white interiors (Lehner 1988:63).

One gray and one buff stoneware sherd were recovered from 15Md364. The buff sherd has a gray glaze exterior and brown glaze interior. The gray paste sherd has an orange finish, and appears to be from a stein. A portion of a circular makers mark is present, but is too small a segment to identify the pattern within the circle (Figure 15E). Two lines of lettering, "...enser M..." over "...h...". The "M" is followed by a "i", "m", or "n". The "h" is preceded by an "R" or "P" and followed by "a", "e", or "o", then "r" or "p", then an unidentified letter. The possible letter sequences are uncommon or nonexistent in English, and it is likely that the vessel is made by a German, Czechoslovakian, or other central European firm, because the possible letter sequences do occur in languages in that region. Two buff stoneware sherds from 15Md364 were displaced onto prehistoric site 15Md365. One of these has a cream glaze interior and exterior and one has a brown glaze interior and a white and gray speckled exterior.

One gray and six buff stoneware sherds were collected from 15Md367. The gray sherd has light gray glaze interior and exterior. Two of the buff sherds are bases with this glaze interior and exterior. One is a shoulder sherd with dark brown interior, Rockingham exterior, and a bisque shoulder. Two are body sherds with brown exterior and interior. One has light gray glaze exterior and brown glaze interior.

Two buff and one gray stoneware sherds were recovered from 15Md370. The gray sherd has brown glaze interior and exterior, and is from a curved vessel. One of the buff sherds has blue glaze interior and cream exterior and is from a mixing or serving bowl. The other has brown glaze exterior and white glaze interior, and is probably from a storage vessel.

Two gray and six buff stoneware sherds were collected from 15Md374. One of the buff sherds has ivory glaze interior and exterior and one gray salt glaze exterior and brown glaze interior. Of the gray sherds, one has brown glaze exterior and interior, three are bowl body sherds with white glaze interior and exterior. One is from a plate. One is a scalloped bowl rim with traces of a gilt or painted band at the interior rim.

Ironstone. A total of 43 ironstone sherds were collected in this project. All have white paste. Ironstone dates from 1860 to 1920 (Ketchum 1983:201). Ironstone with scalloped rims and/or impressed and/or relief decoration date from ca. 1895 to 1920 (Montgomery Ward & Co. 1969; Sears, Roebuck & Co. 1920).

Eleven ironstone sherds were collected from the surface of 15Md356 and two white ironstone sherds were recovered from STP 1. The sherds recovered from STP 1 are small chips

from a single base sherd. The two pieces refit but the break is old. Of the 11 sherds collected from the surface, one is a base with relief decoration located on the exterior surface slightly above the base and is probably from a tea set. One is a plain base and body sherd. One is a plain body sherd. One is a body sherd of almost semi-porcelain quality, with an ivory glaze or staining on the interior, and a speckled white and ivory exterior. One is a base sherd with a faint maker's mark--a portion of a crown is present, a common symbol in maker's marks--but the manufacturer could not be identified based on the available information. One is an unscalloped plate rim with a slight impressed band at the rim. One is a scalloped rim with possible relief decoration and faint remnants of painted or gilt band. One is a rim sherd probably with a scalloped edge, but the piece is too small to be sure, and it has a wavy impressed band at the rim. One is a plain unscalloped rim. One is plain unscalloped rim from a large bowl. One is a scalloped plate rim, with an impressed wavy band relief floral band and ivory glaze.

Two ironstone sherds were recovered from the surface of 15Md364. One is from a curved vessel with brown annular banding on the interior and a gilt band on the exterior, dating ca. 1860-1920. The other is from a cup or small bowl with green floral transfer print decoration (Figure 15F), possibly part of a romantic scene, and a scalloped interior surface dating 1860-1920. A third ironstone sherd was recovered from STP 2 of 15Md364. One ironstone plate sherd was displaced onto prehistoric site 15Md365.

Fifteen ironstone sherds were collected from 15Md367. One is a rim with relief decoration in a discontinuous pattern. The sherd is too small to determine if it was scalloped. One is a rim sherd from a saucer or small bowl. One is a bowl base and three are plate bases. One is a bowl body sherd, one a plate body sherd, and one is from a vessel with an odd curvature, possibly from a tea set. One body sherd has blue glaze interior and a bisque exterior. Two are plain unscalloped rims. One is a scalloped rim with relief and impressed decoration. One is an unscalloped rim with relief decoration.

Two ironstone sherds were recovered from 15Md370. One is from a mug or bowl and one is a plate body sherd.

Four ironstone sherds were collected from 15Md371. Three are undecorated (one plate base, one curved vessel body, and one indeterminate). One is a scalloped rim with relief decoration. Ironstone dishes with scalloped rims and relief decoration were popular ca. 1890-1910 (cf. Schenian 1988:49; Plate 3b, m, and s).

Five ironstone sherds were recovered from 15Md374. One is a saucer base, one is a curved vessel body, one is an

indeterminate vessel body, and one is a small bowl rim. One is a scalloped plate rim with relief decoration.

Refined Earthenware. All of the refined earthenware collected in this project is whiteware, i.e., earthenware with a white paste. Unless decoration is mentioned, the sherd has white glaze on the exterior and interior surface, but no other decoration. Whiteware dates from 1830 to 1890 (Smith 1983:171).

One whiteware sherd was recovered from 15Md347 and one from 15Md349. Neither sherd was decorated.

A total of 34 whiteware sherds were recovered from the surface of 15Md356. Eleven are plate or bowl bases without makers marks. One is a saucer base without a makers mark. Thirteen are body sherds from curved vessels of indeterminate form. One is a body sherd from a curved vessel, possibly from a tea set, with floral relief decoration. One is an undecorated plate rim. One is a rim sherd from a large bowl possibly with a gilt band remnant on the rim exterior, and possible metallic purple decoration or staining below the rim on both the exterior and interior. One is a plate rim sherd with an embossed band at the rim. The rim probably had a gilt or painted band at one time. One sherd is a possible cup rim with a painted wavy band or ribbon on one side and traces of transfer print on the other side. One plate base (Figure 15A) and one cup rim are decorated with green, blue and yellow floral transfer print. The cup additionally has relief braid decoration at the interior rim. One rim and one body sherd are in the Fiestaware Tango pattern in spruce green. Tango dates ca. 1935-1939 (Huxford and Huxford 1987:82).

One whiteware sherd with hand painted blue floral decoration was collected from 15Md362. The sherd was too small to identify the vessel type.

Three whiteware sherds were collected from 15Md364. One is a piece of a bowl or tea set and is undecorated. One is undecorated and too small to identify the vessel form. One is from a bowl and has a faded floral transfer print on the interior.

Thirteen whiteware sherds were recovered from 15Md367. All the sherds from 15Md367 have extensive crazing and some are partially exfoliated. Five are plain body sherds, and four are plate bases without marks. One is a bowl body sherd with traces of a floral transfer print on the interior and exterior and traces of lime green paint on the interior. One is body sherd from a curved vessel with a lime green annular band. One is an unscalloped rim from a bowl or plate and has a relief dot ban on the interior rim. One is a scalloped rim with relief and impressed decoration.

One undecorated whiteware sherd was recovered from 15Md371. It is from a plate base.

Four whiteware sherds were collected from 15Md374. One is a plate rim, two are plate base sherds, and one is a body sherd from a curved vessel. None are decorated.

Semi-porcelain. Eight semi-porcelain sherds were collected in this project. Semi-porcelain dates from 1880 to present (Worthy 1983:337).

Four semi-porcelain sherds were recovered from 15Md356. One has a dark brown glaze, one is plain, and two are from a single plate. The two from the single plate are a rim with two green annular bands (Figure 15B), and a body/base sherd with geometric shapes ("X's"?) outlined in green with two concentric green ovals in between the outlined shapes (Figure 15C). Within the center oval is a solid green cross. Between and at the base of the two ovals is the phrase "LOS · ANGELES ·". Adjacent to the dot following the "S" of "ANGELES" is another letter, possibly an "L", suggesting that another phrase formed the top of the oval. Most probably this plate is a souvenir from a hotel or hospital in Los Angeles, California.

Two semi-porcelain sherds were recovered from 15Md362. One is from a large bowl or a tea pot. One is from a cup and has possible traces of transfer print.

One semi-porcelain sherd was collected at 15Md367. It is undecorated.

One semi-porcelain sherd was recovered from 15Md374 (Figure 15I). It has a green floral transfer print decoration, and post-dates 1880. It is from a curved vessel, possibly a tea or coffee pot.

Porcelain. A total of four porcelain sherds were recovered from the project sites. One may actually be part of a statue, which would fall under the furniture/furnishings group rather than the kitchen group.

One porcelain sherd with a portion of a makers mark was recovered from 15Md362. The letters "Czecho..." are readable, and indicate that the piece is a Czechoslovakian ceramic, and must post-date 1918 (Kovel and Kovel 1986:229), when Czechoslovakia was created. The remainder of the mark present is too faint to determine the pattern or other letters which might permit identification of the manufacturer or a more specific date range.

Two porcelain sherds were collected from 15Md367. One is a rim sherd from a cup. One is a body sherd with an odd surface, and may derive from a statue rather than a dish.

One porcelain sherd was collected from 15Md374. It has possible traces of transfer print on the interior surface and is probably from a cup.

Glass

Glass kitchen artifacts are divided into three main categories. These are bottles, dishware, and canning jar lid liners.

Bottle glass. A total of 156 bottle glass fragments were recovered in this project. Amethyst bottle glass dates from ca. 1880 to 1914 (Newman 1970:70-75). Amber glass dates from 1860 to present, green glass from 1865 to present, clear glass from 1875 to present and cobalt and milk glass from 1890 to present (Fike 1987:13).

Seven amethyst, one amber, 18 aqua, two green, four light green body pieces, and 25 clear glass fragments were found on the surface of 15Md356. One of the amethyst pieces is a bottle base with "I" in a diamond, the 1916-1929 mark of the Illinois Glasss Co., Alton, Illinois (Toulouse 1971:264). Another base is embossed with an "M" or "W", which was not identified. The other amethyst pieces consist of one base and four body fragments. The amber piece is a fragment of a wide-mouth cork-stopped rim. The aqua pieces consist of 11 plain body pieces, one screw-top lid and three with lettering from Ball Mason jars. All of the aqua pieces are from canning jars. One of the aqua pieces is a rim with screw threads. The 25 clear glass pieces include of one soda bottle rim, 14 body sherds, two shoulder sherds, one brandy neck, two other neck pieces, and one base with no embossing. One clear glass base is marked "512" over "9" and another is embossed "85", both of which probably indicate batches or machine numbers rather than manufacturers. One base has the Owens-Illinois mark of a diamond on an oval, with a "12" to the left and a "4" below. Two ice blue bottle neck pieces were recovered from STP 1.

One green, one cobalt, eight aqua, four amber (one from STP 1 and three from the surface), and three clear curved glass pieces were recovered from 15Md364. Seven of the aqua pieces are from canning jars and one is from a bottle. One of the amber pieces is embossed "...ATED" over "XX..." with the X's at a tilt. The "X's" and the amber color of the bottle suggest that the bottle contained alcohol or poison. One aqua, two amethyst, and one amber glass fragments from 15Md364 were displaced onto prehistoric site 15Md365.

A total of 22 amethyst, three green, two ice blue, eight aqua, one dark green, five cobalt, two amber, and eight clear curved glass fragments were collected from 15Md367. One of the amethyst bases is a bottle base with an Owens scar, dating 1904-1914. The three green pieces represent one

paneled bottle, one round bottle and one body piece from an unidentified bottle type. The dark green piece is embossed "Bub..." and is a portion of a Bubble Up soda bottle. Two of the clear pieces are embossed, but are too small to identify the pattern. Six of the aqua fragments are from canning jars and two are from paneled bottles. One of the canning jar body fragments is embossed with lines which may be part of a "4", a star, or a geometric pattern. Of the cobalt pieces, four are body pieces and one is a cork-stopped mouth. Five of the unlettered body sherds are from round bottles and one is from a paneled bottle. One clear piece is a rim with cork or cap closure. One clear piece is a body fragment lettered "...IJ..." which could not be identified.

One amethyst, one amber, one cobalt, and one clear curved glass piece were recovered from 15Md370. All are unembossed body fragments.

Six aqua, one amethyst, one cobalt and one clear green glass pieces were recovered from 15Md371. The six aqua pieces are all from canning jars.

Three amethyst, two clear, two green, one cobalt and four aqua bottle glass fragments were collected from 15Md374. One of the clear pieces has a basket weave decoration and is embossed "CAN...". It is probably a Canada Dry bottle. The two green pieces probably derive from a Coke bottle. The cobalt piece is from a screw-top jar.

Dish glass. A total of eight fragments of dish glass were recovered in this project. Dish glass colors are dated the same as bottle glass colors, although dish glass often has recognizable pressed or cut patterns which permit more specific identification of manufacturing dates.

One pink Depression dish glass fragment and two clear glass fragments were found on the surface of 15Md356. One clear glass piece is from a paneled tumbler and the other is from a round tumbler. It is a portion of the Mayfair, or Open Rose, pattern manufactured by Hocking Glass Co. between 1931 and 1937 (Luckey and Burris 1986:118-119). Due to a pattern patent dispute, the Mayfair pattern was modified several times to avoid a lawsuit (Luckey and Burris 1986:118-119). Translucent Depression glass does not photocopy well, so the illustration in Figure 15D is reduced from the line drawings in Luckey and Burris (1986:119). The pattern on the piece from 15Md356 is similar to but not exactly the same as this illustration, but Luckey and Burris do not identify what stage of the pattern change transition sequence he is illustrating.

Two milk glass dish fragments with relief decoration were recovered from 15Md364. One has a bead and swirl relief decoration and one is plain. The plain one has a color tone

and texture typical of Depression glass, and probably dates from the 1930's.

Three milk glass dish fragments were recovered from 15Md367. Two are bases of stemmed vessels. One is a body sherd from near the vessel rim with a dot and swirl pattern near the rim that is separated from the body of the vessel with a band (Figure 15G).

Lid liner. Milk glass lid liners date from 1869 to 1915 (Toulouse 1969:499). Seven milk glass lid liner fragments were recovered from the surface of 15Md356. Two of these refit to form a whole lid, which is lettered "A GENUINE BOYD'S CAP FOR MASON JAR ^{13}". Three of the other fragments from 15Md356 have portions of the Boyd's cap wording. Two milk glass lid liner fragments were recovered from 15Md364, and one has a portion of the Boyd's cap phrase. One milk glass lid liner was recovered from 15Md367.

Canning Jar Lid

A portion of one zinc canning jar lid with "ATLAS" embossed on it (Figure 16A) was found at 15Md356. Zinc canning jar lids date from 1869 to the 1940's.

ARCHITECTURAL GROUP

Brick

One brick fragment was recovered from 15Md364. It was found in STP 1.

Flat (window) glass

One green flat glass fragment was recovered from 15Md348. One green flat glass piece was also recovered from 15Md364.

Three green flat glass pieces were recovered from the surface of 15Md356. One clear flat glass piece, 2.21 mm thick, was recovered from STP 1 of 15Md356. One clear flat glass piece 2.64 mm thick, and one green tint flat glass piece 1.92 mm thick, was recovered from STP 2 of 15Md356.

Sixteen flat glass pieces were collected from 15Md367. Eleven are green and five have a yellowish tinge which is probably due to post-depositional staining. This staining makes is difficult to determine if they are green, clear, or actually yellow.

Two clear flat glass fragments were recovered from 15Md371. One is 2.48 mm thick and one is 2.84 mm thick.

Two light green flat glass pieces were recovered from 15Md374. One is 1.88 mm thick, and one is 2.62 mm thick.

Nail/spike

One square nail shaft fragment and 11 items which may be nail fragments or short lengths of wire were recovered from STP 1 of 15Md356. One of the items appears to be a cluster of nails or wire pieces held together by rust.

Two machine cut nails were found in STP 1 of 15Md356, and one wire nail was recovered from STP 3 of 15Md356.

One wire nail was recovered from STP 1 at 15Md364, and two square cut nail fragments were recovered from STP 2 at 15Md364.

FURNITURE/FURNISHINGS GROUP

Two fragments of clear glass from a kerosene lamp chimney were recovered from STP 2 at 15Md364. Two fragments of kerosene lamp glass were collected from 15Md367. Both have a possible amethyst tinge but are also have yellow staining which prevents a certain determination of whether they are clear or amethyst glass.

One milk glass fragment from the base of a flower vase was recovered from 15Md367. The sides of the vase had an embossed stylized floral (palm or leaf) pattern (Figure 15H).

One clear glass fragment 10.61 mm thick was recovered from 15Md370. It is probably from a table top.

PERSONAL GROUP

One tin button was recovered from 15Md356 (Figure 16B). It has an embossed spiral design.

TRANSPORTATION GROUP

Transportation

One incomplete horseshoe was found in this project (Figure 16C). It was discovered at 15Md356.

ACTIVITIES GROUP

Miscellaneous Hardware

One unidentified metal object 10.34 cm long and 4.62 cm wide was recovered from STP 2 of 15Md356 (Figure 16D). It is of heavy steel and is a moving part which loosely hooked onto another part and rubbed against a third part. It is possibly from the treadle assembly of some sort of early foot-powered mechanical tool.

VII. CULTURAL RESOURCES

The UTM coordinates of the cultural resources inspected are listed in Appendix B. The site and isolated find locations are shown in Figures C-1 through C-3, the site plans are Figures C-4 through C-42, and the representative soil profiles are depicted in Figures C-43 through C-45, in Appendix C.

Archaeological Sites

All the sites in the Fall 1994 Rehab areas have been disturbed, most extensively, by tank training and wheeled vehicle activity, and many of the sites probably have been extensively collected by relic hunters; therefore, the amount of cultural material recovered is not believed to accurately reflect the quantity left by the groups who used the sites. Artifact assemblages of more than 50 prehistoric items were obtained from only five sites in the Fall 1994 rehab areas. The materials from these sites are used to gain insight into the activities associated with the sites, although it is recognized that inferences based on tool and flake characteristics are limited in scope and should be considered only impressions. The locations of water sources and chert sources are especially difficult to determine because of the extensive land alteration and erosion caused by training activities. It is especially difficult to ascertain the resources available in the sinkholes because they have been severely eroded and partially filled with soil from the sides and perimeters.

15Md347

Site 15Md347 is a sparse lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-1, C-4, and C-43). A single whiteware sherd was recovered from the site, but it does not coincide with any known historic site. It is believed to represent redeposited material from an unknown site or isolated dumping episode, rather than a historic component per se.

Site 15Md347 is located at an elevation of 660 feet on a relatively level ridge spur above Otter Creek. There are drainages 80 m to the northwest and 30 m to the southeast of the site. Soils in the site area are Nicholson silt loam. The surface is covered with weeds, bushes, and small trees that considerably limit visibility (averaging 25 percent visibility, but do not totally obscure the ground surface, and the only clearly exposed area (100 percent visibility) is along the tank trail that crosses the site. The site area has been extensively used for tank training and the

entire surface is rutted and has been partially deflated, and there was no evidence of topsoil. Three chert flakes and one whiteware sherd were found in an area approximately 5 m in diameter, along the tank trail.

Site 15Md347 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because there is no evidence of intact cultural materials, and because it is of indeterminate prehistoric cultural temporal affiliation. No additional archaeological work is recommended for 15Md347.

15Md348

Site 15Md348 is an open habitation site with Late Archaic and Middle Woodland components (Figures C-1, C-5, and C-43). A sherd of orangeware and a piece of green flat glass also were found, but are believed to represent redeposited materials or modern refuse, rather than a historic component on the site.

The site is located at an elevation of 680 feet on the crest of a ridge above Otter Creek, about 120 m west of Pinwheel Road. There are drainages 50 m to the north and 80 m to the south of the site. Soils in the site area are Nicholson silt loam. There were weeds, bushes, and small trees on the surface that partially limited visibility (averaging 25 to 50 percent), and there was 100 percent visibility along the tank trails and at the crest, where several trails converged. Shovel probes indicated that intact deposits were no longer present. Cultural materials were found at the crest and downslope to the northwest in an area 60 m (northwest-southeast) by 30 m.

A total of 61 prehistoric artifacts were recovered from the site. Temporally distinct occupations are indicated by the presence of a Snyders point and a Matanzas point. The debitage sample contained few flakes with cortex; therefore, it does not appear that initial reduction of raw material was being carried out at the site. The chippage reflects preparation and trimming of cores, rather than manufacture of bifaces, though one biface/preform was found. The quantity of debitage does not suggest intensive habitation.

Site 15Md348 is not eligible for the National Register, because it has been deflated or eroded to subsoil by wheeled vehicles and tanks, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md348.

15Md349

Site 15Md349 is an open habitation site with a Late Archaic component (Figures C-1, C-6, and C-43). One whiteware sherd was recovered, but is believed to represent redeposited materials or modern refuse dumping, rather than an actual historic component at this location. The site is located at an elevation of 670 feet on a bench of a ridge above Otter Creek, about 170 m west of Pinwheel Road and 100 m south of Airstrip Road. There are drainages on the north, south, and west sides of the site. Soils in the site area are Nicholson silt loam. There were weeds, bushes, and small trees on the surface that partially limited visibility (zero to 75 percent surface visibility), and there was 100 percent visibility along the numerous tank trails. The site has been deflated to subsoil by wheeled vehicles and tanks, and shovel probes revealed no evidence of intact cultural materials.

The site was 50 m wide at the southeast end, 200 m from east to west and 110 m wide at the northwest end. Cultural materials were concentrated on two level areas connected by a shallow slope, and one whiteware was also found. A possible McWhinney projectile point and a Kramer point were found at the southwest end of the site, and may represent temporally distinct occupations. A side scraper was the only other formal tool recovered from the site, although four utilized flakes were among the 146 pieces of debitage collected. The lack of tools may be partially a result of the proximity of the site to two roads and the concomitant likelihood of collection by relic hunters. Little cortical debris was present in the chippage sample. Only a few large secondary flakes had sizable amounts of cortex, and the remainder of the secondary flakes were small and had little cortex. The sample of secondary and tertiary flakes and shatter consisted of about equal amounts of small to medium-sized core trimming and shaping flakes and biface reduction flakes. The large size of the site and the wide distribution of the cultural material allow the possibility that other components are present but undetected. Only a moderate amount of cultural material was recovered from the exposed ground surface, but the presence of distinct concentrations suggests the presence of definable activity areas, possibly related to at least short-term habitation.

Site 15Md349 is potentially eligible for the National Register, although it appears to have been deflated to subsoil in most areas by wheeled vehicles and tanks. Although deflated to subsoil over much of the site, it is considered highly likely that isolated intact cultural features and identifiable activity areas exist on this site. The high artifact density, the presence of formal tools, and the possibility of intact features or recognizable activity areas indicate the need for further investigation. Additional archeological work is recommended for 15Md349.

15Md350

Site 15Md350 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-1, C-7, and C-43). It is located at an elevation of 660 feet on a bench of a ridge above Otter Creek, about 100 m west of Pinwheel Road and 70 m south of Airstrip Road. There is a drainage to the east of the site. Soils in the site area are Nicholson silt loam, and weeds, bushes, and small trees partially limited visibility and there was 100 percent visibility along the tank trails. The area had been deflated to subsoil by wheeled vehicles and tanks, although it appears that topsoil had been redeposited in this area through erosion of the higher portions of the ridge. There is no evidence of intact cultural materials. Fifteen chert flakes were found at the intersection of the two tank trails, in an area 10 m in diameter. Although soil appeared to be have been redeposited in this area, it is not believed that the cultural material are redeposited -- i.e., the original soil was washed or blown away, settling the cultural material on the subsoil of the bench, and then additional topsoil washed in and mixed with or covered the remaining subsoil. The small size of the bench and the limited artifact assemblage at this size make it unlikely that cultural features, if they ever existed, would remain after the episodes of deflation and erosion.

Site 15Md350 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because there is no evidence of intact cultural materials, and because it is of indeterminate prehistoric cultural temporal affiliation. No additional archeological work is recommended for 15Md350.

15Md351

Site 15Md351 is an open habitation site of indeterminate prehistoric cultural-temporal affiliation (Figures C-1, C-8, and C-44). It is located at an elevation of 610 feet on the northeast side of the Dry Branch of Otter Creek, on a terrace above Otter Creek and the Dry Branch where these streams cut through Pleistocene lacustrine deposits. West of the site the land slopes steeply to the Dry Branch. Pinwheel Road marks the approximate eastern boundary, but more precise delineation was prevented by road construction which probably destroyed the eastern margin of the site. The northeast boundary of the site is marked by the steep rise of a hill, and a portion of the site extends to the west of the hill as far as a drainage that flows into the Otter Creek at its confluence with the Dry Branch.

The site appeared to have been associated with several small seeps or springs that flowed westward into the Dry

Branch, and there may have been small seeps within the site. The soil in the site area is Nicholson silt loam, and the lacustrine silt in the shovel probes did not show color and texture changes. Most of the site was covered with sparse grass and was crisscrossed by tank trails. The surface, especially at the southern end, appeared to have been deflated and eroded by tank training, and the four shovel probes at the southeastern end of the site and a shovel probe at the northeast end did not produce cultural material. A shovel probe in the north-central portion of the site contained a small amount of chippage and possibly intact cultural deposits. The western portion of the site has a dense thicket of briers, small trees, bushes and poison ivy, and the ground surface is more than 20 cm higher than the majority of the site. The shovel probe in this thicket produced a few flakes, including one at 17 cm, and two below 25 cm. It appears that intact cultural materials are present below the depth of plowing and tank training disturbance. A considerable amount of chippage was recovered from the surface of the vehicle trails in the vicinity of the shovel probe. An adjacent probe also contained several flakes.

A total of 168 cultural items, including numerous tools, were scattered across a 210 m (north-south) by 110 m area, with concentrations between the shallow drainages on the west side of the site. The cultural material strongly indicates 15Md351 was a habitation site. Primary and secondary cortical debris from Wyandotte chert nodules was present, and bifaces that represent manufacture stages from initial reduction to finished tool fragments were found. The debitage was overwhelmingly composed of small to very small flakes from biface reduction, and was found in distinct concentrations. The site was adjacent to a road and readily susceptible to collection by relic hunters, which may explain why only fragmentary tools were recovered. No diagnostic artifacts were found in the current project.

A local informant (George Lancaster of Vine Grove, Kentucky) showed the authors a Late Archaic McWhinney Heavy Stemmed that he had collected from the site and reported that other projectile points had been found there, but the number of components and the cultural affiliations are not known. He also reported that the site had been borrowed for fill at one time (approximately 20 years ago), and that projectile points, a stone axe, and other artifacts had been collected, by various Fort Knox employees, from the spoil pile placed in the cantonment area after heavy rains. The locations of these collections are unknown, and the spoil pile no longer exists. Efforts are being made to identify the collections and to convince the collectors to return the materials to Fort Knox. Due to the long time which has elapsed since the spoil pile was removed, however, the chances of identifying all collections from this site are slim.

Site 15Md351 is potentially eligible for the National Register, although portions of it were borrowed and portions appear to have been deflated to subsoil by wheeled vehicles and tanks. The high artifact density, the presence of numerous formal tools, the subplowzone cultural deposits, and the possibility of intact features, or recognizable activity areas indicate the need for further investigation. Additional archeological work is recommended for 15Md351. The existence of this site is so well known, especially by senior Fort Knox employees concerned with borrowing activities and other outdoor activities, that the Fort Knox CRM staff will coordinate with the game wardens and other security personnel to have the site routinely patrolled to keep collectors away and to inform them that all materials from the site are federal property.

15Md352

Site 15Md352 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-1 and C-9). It is located about 140 m west of Pinwheel Road, at an elevation of 620 feet. It lies on a small level area on the lower slope of a ridge above a terrace, where Otter Creek and the Dry Branch cut through Pleistocene lacustrine deposits. The site appears to consist of an accumulation of chippage around a spring that flows westward from the side of the ridge into Otter Creek. The ridge slopes steeply downward to the west and steeply upward to the east, and has a moderate upward slope to the north. The flatter portions of this area were too narrow for habitation. The soil in the site area is Baxter silt loam, and the ridge is covered with briers, scrub vegetation, and small trees. A biface fragment and 11 chert flakes were scattered along the eroded tank trail over a 20 m (north-south) by 3 m area. Ground surface visibility was approximately 100 percent on the tank trail and extensive cutbanks were available for observation adjacent to the tank trail and in erosional gullies perpendicular to the trail, which originated from springs flowing towards Otter Creek.

Site 15Md352 is not eligible for the National Register, because it has been eroded to subsoil by wheeled vehicles and tanks, because there is no evidence of intact cultural materials, and because it is of indeterminate prehistoric cultural temporal affiliation. No additional archeological work is recommended for 15Md352.

15Md353

Site 15Md353 is a lithic scatter with Early Archaic and Middle Archaic components (Figures C-1 and C-10). It is located about 100 m west of Pinwheel Road, at an elevation

of 660 feet. It lies on the south slope of a ridge above a terrace where the Dry Branch and Otter Creek cut through Pleistocene lacustrine deposits. There are drainages to the east and west, and the area also has ravines caused by erosion. The south boundary is marked by the steep slope downward to the terrace. The soil in the site area is Baxter silt loam, and the surface had almost no vegetation, only a few low weeds. Ground surface visibility was nearly 100 percent over most of the site. The surface was completely eroded by tank training, and no intact deposits were present. A Kirk Corner Notched projectile point, a Raddatz Side Notched point, a biface, and 12 pieces of debitage were scattered across a 35 m (north-south) by 20 m area.

Site 15Md353 is not eligible for the National Register, because it has been eroded to subsoil by wheeled vehicles and tanks, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md353.

15Md354

Site 15Md354 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-1, C-11, and C-44). It is located about 25 m west of Pinwheel Road, at an elevation of 660 feet. It lies on the southeast slope of a ridge above a terrace where Otter Creek and the Dry Branch cut through Pleistocene lacustrine deposits. The site is located between drainages lying to the east and west, and the south boundary is formed by a drainage. The soil in the site area is Baxter silt loam, and there is almost no vegetation on the surface, only a few small trees in an isolated grassy strip. The site area has been eroded to subsoil by wheeled vehicles and tanks, and there is no evidence of intact cultural materials. Twenty-six pieces of debitage were scattered across a 40 m (north-south) by 20 m area.

Site 15Md354 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because it is of indeterminate cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md354.

15Md355

Site 15Md355 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-1 and C-12). It is located about 120 m west of Pinwheel Road, at an elevation of 670 feet. It lies on the crest and north slope of a knoll on a ridge spur above a terrace where Otter Creek and the Dry Branch cut through Pleistocene lacustrine

deposits. There are several small drainages to the east and west, and sinkholes to the north. The soil in the site area is Baxter silt loam, and the only vegetation is small patches of spindly weeds. The area has been eroded to subsoil by wheeled vehicles and tanks, and there is no evidence of intact cultural materials. A projectile point, a biface fragment, and 16 pieces of chert debitage were scattered across a 50 m (east-west) by 20 m area.

Site 15Md355 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because it is of indeterminate cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md355.

15Md356

Site 15Md356 is a mid nineteenth century to mid twentieth century farmstead (Figures C-1, C-13, and C-44). It is located about 150 m west of Pinwheel Road, at an elevation of 670 feet, on the crest of a ridge spur above two large sinkholes to the west and two large sinkholes to the east. The soil in the site area is Hammack-Baxter silt loam, and poison ivy, briers, high weeds, bushes, vines, and small trees obscured the ground surface except in the tank trails around the periphery and through the middle of the site. Most of the site has been crisscrossed by military vehicles and much has been eroded to subsoil. There were small areas with some topsoil, but shovel probes revealed no evidence of *in situ* cultural materials or structural remains.

Two adjoining depressions, each approximately 2 m square, were identified on the site. A shovel test excavated inside and near the edge of one of these depressions had a thin, but normal, topsoil-subsoil boundary. In view of the extensive disturbance due to military activities elsewhere on the site, it is considered unlikely that these depressions are of historic origin. It is more likely that they were the location of the small warm-up sheds or munition/explosive storage sheds which are used in training areas. These sheds are approximately 2 m square and are moved from area to area as they are needed.

A total of 175 historic items were scattered across a 75 m (north-south) by 55 m area, with a concentration, possibly representing a dump that was dispersed by tank traffic, at the intersection of a tank trail at the west edge of the site and a trail that bisected the site east to west. Historic debris was found in the eroded tank trails around the periphery of the site and on the trail through the center. The site is on the former property of James Padgett.

A shovel test excavated in this probable dump area had a highly disturbed soil profile, and cartridges deriving from military activities were intermixed with the historic materials. The cartridges were not retained, due to contamination and explosive potential. Another shovel test yielded a fragment of a 60 mm shell, which was recognized in the lab by Phil DiBlasi and discarded.

Site 15Md356 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, and because there is no evidence of intact cultural materials or structural remains. No additional archeological work is recommended for 15Md356.

15Md357

Site 15Md357 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-1 and C-14). It is located at an elevation of 750 feet slightly east of the middle rise on the crest of a narrow ridge between a huge sinkhole to the east and several small drainages to the west. Soils in the site area are Nicholson silt loam, and visibility was nearly 100 percent, since only a few isolated patches of grass and a few large trees are present. The site has been eroded to subsoil by wheeled vehicles and tanks, and there is no evidence of intact cultural materials.

One projectile point fragment, two unifaces, two scrapers, and 28 pieces of chert debitage were found in an area approximately 80 m (east-west) by 20 m on the eastern side of the ridge. The sinkhole and another directly to the south may have provided a water source, and probably provided abundant floral and faunal resources. The sides of the sinkhole are covered with slope wash from the eroded surface around the sink, therefore, it is difficult to assess the resources potentially available at the time of occupation of this site. Small pieces of high quality natural chert were seen on the eroded slope of the sinkhole and may have been exposed in residual form or in an outcropping in the sink. The cutting and scraping tools and projectile point fragment indicate at least specialized activity at the site, but the small amount of debitage suggests there was not intensive occupation.

Site 15Md357 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because it is of indeterminate cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md357.

15Md358

Site 15Md358 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-1 and C-15). It is located at an elevation of 770 feet on the crest of the western rise of a narrow ridge between a sinkhole to the east and several small drainages to the west. The soils in the site area are Nicholson silt loam, and visibility was nearly 100 percent, since only a few isolated patches of grass and a few large trees are present. The area has been extensively used for tank training and the entire surface has been deflated and eroded by the training activities. There is no evidence of intact cultural deposits.

A projectile point fragment, two unifaces, and 10 pieces of chippage were found in an area approximately 40 m (east-west) by 30 m. The sinkhole and another directly to the north may have provided water sources, and probably provided abundant floral and faunal resources. The sides of the sinkhole are covered with slope wash from the eroded surface around the sink, therefore, it is difficult to assess the resources potentially available at the time of occupation of this site. Small pieces of high quality chert was seen on the eroded slope of the sinkhole, and may have been exposed in residual form or in an outcropping in the sink. The cutting tools and projectile point fragment indicate at least specialized activity at the site, but the small amount of debitage suggests there was not intensive occupation.

Site 15Md358 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because it is of indeterminate cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md358.

15Md359

Site 15Md359 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-1, C-16, and C-44). It is located at an elevation of 750 feet on the southwest end of a narrow ridge above an eastward bend in Otter Creek. About 40 m to the east was a drainage that flowed southeastward into Otter Creek. Soil in the site area is Nicholson silt loam, and visibility was about 10 percent, since only the tank trail was not covered with weeds or bushes. Visibility in the tank trail was nearly 100 percent. The soil had been disturbed by tank training and was mottled and had only a very small amount of cultural material. Four shovel probes were excavated and did not yield any cultural material below plowzone. Nine pieces of

chippage were found in an area approximately 20 m (east-west) by 10 m.

Site 15Md359 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because it is of indeterminate cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md359.

15Md360

Site 15Md360 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-1 and C-17). It is located at an elevation of 730 feet on the edge and slope of a sinkhole, about 140 m west of Pinwheel Road. Soil in the site area is Riney-Lily complex silt loam. Surface visibility was nearly 100 percent, since only a few isolated patches of grass and a few large trees were present. The area has been extensively used for tank training and the entire surface has been deflated and severely eroded. There was no evidence of intact cultural deposits.

The sinkhole at which the site is located and another sinkhole directly to the south may have provided a water source, and probably provided abundant floral and faunal resources. The sides of the sinkhole are covered with slope wash from the eroded surface around the sink, therefore, it is difficult to assess the resources potentially available at the time of occupation of this site. Small pieces of high quality natural chert were seen on the eroded slope of the sinkhole to the south, and may have been exposed in residual form or outcropping in the sink. A scraper and three pieces of chippage were found in an area approximately 40 m (north-south) by 30 m.

Site 15Md360 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because it is of indeterminate cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md360.

15Md361

Site 15Md361 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-1 and C-18). It is located about 200 m west of Pinwheel Road, at an elevation of 665 feet, on a slight slope above a level ridge spur above Otter Creek. There are drainages on the northwest and southeast sides of the site. Soil in the site area is Nicholson silt loam, and visibility was very poor (less than 25 percent in most areas), since the only exposed

ground surface was the tank trail (100 percent visibility). All observable areas showed extensive evidence of disturbance due to tank training, however, and probable bulldozing of a trail. The area has been extensively used for tank training and the entire surface has been partially deflated by the training activities. No shovel tests were excavated at this site due to the evidence for prior disturbance. No evidence of intact cultural deposits or potential intact deposits was observed on the ground surface. Three chert flakes were found in an area approximately 10 m in diameter, along the tank trail.

Site 15Md361 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because it is of indeterminate cultural-temporal affiliation, because it has evidence of bulldozer disturbance, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md361.

15Md362

Site 15Md362 encompasses a lithic scatter of indeterminate prehistoric cultural-temporal affiliation and a mid nineteenth to mid twentieth century farmstead on the former property of J.A. Bill (Figures C-2, C-19, and C-45). The site is located at an elevation of 660 feet on a knoll, the majority of which lies southeast of the intersection of Basham Road and Twin Bridge Road. Sinkholes lie to the west and south. Soil in the site area is Baxter silt loam, and there was scrub vegetation, bushes, poison ivy, and a few large trees at the south end of the site.

The majority of the site is probably under Twin Bridge Road and its embankments, and most of the area north and south of the road has been scraped for fill for building the roads or has been eroded to subsoil by tank training. A shovel probe was placed in the vegetated area at the south end of the site, but there do not appear to be intact cultural deposits. No other areas with potential intact soils were identified on the site which would have warranted more extensive shovel testing. A biface fragment and 14 chert flakes and four historic ceramic sherds were found on both sides of Twin Bridge Road, over an area 50 m in diameter.

Site 15Md362 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because it is of indeterminate prehistoric cultural-temporal affiliation, and because there is no evidence of intact prehistoric or historic cultural materials or structural remains. No additional archeological work is recommended for 15Md362.

15Md363

Site 15Md363 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-2 and C-20). It is located about 300 m east of Basham Road and 170 m south of Twin Bridge Road, at an elevation of 660 feet, on a low rise. Sinkholes lie 120 m to the north and 30 m to the south. The soil in the site area is Baxter silt loam, and visibility was excellent (100 percent). There were a few weeds on the south end of the site, but the majority of the site has been deflated to subsoil by wheeled vehicles and tanks, and there is no evidence of intact cultural materials. Four pieces of debitage were found over an area 10 m in diameter.

Site 15Md363 overlaps with a portion of 15Md364, but is a distinct locus of prehistoric activity at the southeastern end of the much larger historic site. A separate site number was therefore assigned to the prehistoric site.

Site 15Md363 is not eligible for the National Register, because it has been deflated and eroded to subsoil by wheeled vehicles and tanks, because it is of indeterminate prehistoric cultural-temporal affiliation, and because there is no evidence of intact cultural deposits. No additional archeological work is recommended for 15Md363.

15Md364

Site 15Md364 is a scatter of historic materials associated with a farmstead on the former property of Fidelis Whelan (Figures C-2 and C-21). It is located about 150 m east of Basham Road and 150 m south of Twin Bridge Road, at an elevation of 660 feet. The site lies on a knoll at the south end of a sinkhole. Soil in the site area is Baxter silt loam. The northern portion of the site was covered with poison ivy, vines, saplings, and bushes that partially limited visibility (visibility ranged from zero to 100 percent), but the southern portion and the periphery had excellent visibility (100 percent), because it is bordered on all sides by tank trails. The site has been deflated to subsoil by wheeled vehicles and tanks, and shovel probes yielded no evidence of intact or potentially intact cultural deposits.

A small amount of historic cultural material (42 pieces of glass and ceramics and 3 nails) was found over an area 60 m (east-west) by 40 m, and may have derived from a house, as indicated by the presence of a brick fragment recovered from STP 1 and a brick and a screen door handle observed partially protruding from the ground, but too imbedded to remove from the sun-baked ground. The disturbed soil profiles observed in shovel tests and the types of plants present on the site suggest that the entire site had been stripped of vegetation at some time, but had been allowed to

grow back in scrub vegetation when several small sinkholes surrounding it were avoided in tank training activities because of the risk of miring. A small depression near STP 2 contained the treads which had broken off a tank when it became deeply mired.

Site 15Md364 is a historic site which contains two distinct loci of prehistoric activities. Each of these loci was given a separate site number (15Md363 and 15Md365). All of the historic materials collected from the prehistoric sites were lumped under 15Md364.

Site 15Md364 is not eligible for the National Register, because it has been deflated and eroded to subsoil by wheeled vehicles and tanks, and because there is no evidence of intact historic cultural materials or structural remains. No additional archeological work is recommended for 15Md364.

15Md365

Site 15Md365 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-2, C-22, and C-45). It is located approximately 100 m east of Basham Road, at an elevation of 660 feet. It lies on a low rise with sinkholes 30 m to the north and 60 m to the south. Soil in the site area was Baxter silt loam, and there were a few weeds in the middle of the site. Most of the site was eroded to subsoil by tank training, and there is no evidence of intact cultural materials. Three pieces of debitage were found over an area 10 m in diameter.

Site 15Md365 is not eligible for the National Register, because it has been deflated and eroded to subsoil by wheeled vehicles and tanks, because it is of indeterminate prehistoric cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md365.

15Md366

Site 15Md366 is a lithic scatter with an Early Woodland component (Figures C-2, C-23, and C-45). It is located at an elevation of 660 feet on the crest and east slope of a knoll above two drainages and to the north of a large sinkhole. The two drainages lie about 40 m to the east of the site and flow eastward into Otter Creek. Soil in the site area is Baxter silt loam. There are less severely eroded islands of vegetation with weeds and several large or medium-sized trees and abundant small trees, bushes, and weeds. Most of the site has been deflated or eroded to subsoil by wheeled vehicles and tanks. Several small islands of vegetation were present which appeared to have intact topsoil. The site was shovel probed, but no evidence was found

of intact cultural deposits. The topsoil deposits were determined to be very thin and of much more limited extent than originally believed from the initial inspection of the site. A projectile point fragment, two bifaces, and 19 chert flakes were recovered over an area 65 m (north-south) by 40 m, mostly from tank trails and on the isolated islands of earth.

Site 15Md366 is not eligible for the National Register, because it has been deflated and eroded to subsoil by wheeled vehicles and tanks, and because there is no evidence of intact cultural materials. The artifact count and density are so low and the degree of prior disturbance is so high that further study of the surface materials would not provide any significant information. No additional archeological work is recommended for 15Md366.

15Md367

Site 15Md367 is a scatter of historic materials on the former property of David F. Peak (Figures C-2 and C-24). The site is located at an elevation of 670 feet on a knoll on a high, level area surrounded by sinkholes (60 to 100 m away) that contained water at the time of survey. The soil in the site area is Baxter silt loam. The center of the site is an island of earth, covered with high grass. The island is approximately 1 to 2 m higher than the surrounding area, which has been deeply deflated and eroded by tank training. A total of 117 historic items were collected from the slope surface and base of the island's cutbanks and from the surrounding area, where they had eroded. Cultural materials were collected from an area 60 m (east-west) by 40 m. No intact cultural deposits or structural ruins remained. Visual inspection of the cutbanks and vegetated area indicated that the grassy knoll had been eroded and disturbed by tank training. No shovel probes were excavated at this site, due to the extensive cutbanks available for inspection and due to the extent of disturbance due to tank training observed in the grassy island.

Two sites--15Md367 and 15Md370--were recorded on the former David F. Peak property. Many of the artifacts collected from 15Md367 had been damaged by fire. The assemblage from 15Md367 contained earlier materials than 15Md370, although there was considerable overlap in the more recent range of both sites. It is hypothesized that 15Md367, near the center of the David F. Peak property, was the site of the original house, that this house burned, and that a new house was built at 15Md370, closer to the property boundary and the county road. Alternatively, the two sites may be contemporaneous, with 15Md367 deriving from Peak's farmstead and 15Md370 representing the house of relative or tenant or else an outbuilding placed closer to the road.

Site 15Md367 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, and because there is no evidence of intact historic cultural materials or structural remains. No additional archeological work is recommended for 15Md367.

15Md368

Site 15Md368 is a lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-2 and C-25). It is located at an elevation of 660 feet on the crest and slopes of a narrow knoll above sinkholes to the north (30 m), south, and southeast (40 m). The soil in the site area is Baxter silt loam, and the visibility was excellent (nearly 100 percent), because the surface has only sparse grass. The site has been deflated and eroded to subsoil by wheeled vehicles and tanks, and there is no evidence of intact cultural materials. One biface fragment, one side scraper, and two chert flakes were found over an area 20 m (north-south) by 40 m.

Site 15Md368 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because it is of indeterminate prehistoric cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md368.

15Md369

Site 15Md369 is an open habitation site of indeterminate prehistoric cultural-temporal affiliation (Figures C-2 and C-26). It is located at an elevation of 645 feet on a narrow ridge bounded on the north by two sinkholes (20 and 50 m away) and on the south (30 m) by a drainage that flows eastward into Otter Creek. Soil in the site area is Baxter silt loam. Most of the surface was essentially without vegetation (nearly 100 percent visibility), and the slopes had sparse grass cover (75 percent visibility). The site has been deflated and eroded to subsoil by wheeled vehicles and tanks, and there is no evidence of intact cultural materials. There was a wooded area at the north end of the site, but little cultural material was found adjacent to it, thus it is considered outside the site boundaries.

Two biface fragments and 53 pieces of debitage were found over an area 80 by 25 m (north-south), mostly on the south side of the ridge. The debitage is predominantly small secondary flakes with little cortex and small tertiary flakes and shatter. The site is not near roads, thus it may not have been extensively collected by relic hunters, unlike many of the sites. A scatter of military gear on the site suggested that it had been used for a resting place during

training activities, however, so soldiers may have picked up accidental discoveries of points. The small amount of cultural material may indicate that the site was used only for short-term occupation or specialized activities.

Site 15Md369 is not eligible for the National Register, because it has been deflated or eroded to subsoil by wheeled vehicles and tanks, because it is of indeterminate prehistoric cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md369.

15Md370

Site 15Md370 is a scatter of historic materials on the former property of David F. Peak (Figures C-2 and C-27). It is located at an elevation of 675 feet, on a low rise between small sinkholes about 30 m to the north and south. The site lies approximately 55 m east of Basham Road. Soil in the site area is Baxter silt loam. Most of the site was deflated and eroded to subsoil by tank training. There was tall grass in the middle of the site. Ground surface visibility averaged 50 percent on the site. Ten pieces of historic cultural material were found over an area 20 m in diameter, and two additional pieces were discovered 50 m to the east and north. A discussion of the possible relationship between this site and 15Md367, also located on the former property of David F. Peak, is located in the description of 15Md367.

Site 15Md370 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, and because there is no evidence of intact historic cultural materials or structural remains. No additional archeological work is recommended for 15Md370.

15Md371

Site 15Md371 is a scatter of historic materials on the former property of Roy S. Hunt (Figures C-2 and C-28). The site is located at an elevation of 680 feet, approximately 40 m east of Basham Road, on a low rise between small sinkholes 60 m to the north and 100 m to the south and a large sinkhole 50 m to the west. Soil in the site area was Baxter silt loam. The majority of the site was eroded to subsoil by tank training, but there was a less eroded area with high grass in the middle. Ground surface visibility averaged 75 percent on the site. There did not appear to be intact cultural deposits. Sixteen pieces of historic material were found over an area 20 m (east-west) by 10 m. A chert flake was also recovered from the site.

Site 15Md371 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, and because there is no evidence of intact historic cultural materials or structural remains. No additional archeological work is recommended for 15Md371.

15Md372

Site 15Md372 is an lithic scatter of indeterminate prehistoric cultural-temporal affiliation (Figures C-2 and C-29). The site is located at an elevation of 690 feet, approximately 180 m east of Basham Road. It lies on a low ridge about 150 to 200 m from two small sinkholes to the west, a large sinkhole to the southeast, and a large drainage that flows eastward into Otter Creek. Soil in the site area is Baxter silt loam. Sparse grass covered the ground surface, and ground surface visibility was nearly 100 percent. All of the site was eroded to subsoil by tank training, and there did not appear to be intact cultural deposits. Six chert flakes were found over an area 20 m (east-west) by 15 m.

Site 15Md372 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, because it is of indeterminate prehistoric cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md372.

15Md373

Site 15Md373 is an open habitation site of indeterminate prehistoric cultural-temporal affiliation (Figures C-2 and C-30). It is located at an elevation of 660 feet, on a narrow strip of land between a sinkhole, about 40 m to the southwest, and a drainage directly to the northeast that flows into Otter Creek. Soil in the site area is Baxter silt loam. Most of the site was eroded to subsoil by tank training and had 100 percent ground surface visibility. High weeds and a few bushes in the middle of the site reduced visibility to less than 10 percent. Shovel probes did not reveal intact cultural deposits. A biface fragment, a uniface, an end scraper, a hammerstone, and 16 chert flakes were found over an area 40 m (north-south) by 30 m.

Site 15Md373 is not eligible for the National Register, because it has been deflated and eroded to subsoil by wheeled vehicles and tanks, because it is of indeterminate prehistoric cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archeological work is recommended for 15Md373.

15Md374

Site 15Md374 is a scatter of historic materials on the former property of Joe W. and Mary Thomas (Figures C-2, C-31). It is located at an elevation of 670 feet, 30 m north of old U.S. 60, on the west side of a ridge between two drainages (20 m and 150 m away) that flow northward to Otter Creek and 20-40 m from sinkholes to the southwest and southeast. Soil in the site area is Baxter silt loam. Most of the site has been eroded to subsoil by tank training, and there were high weeds, briers, and bushes on the site, but there was good visibility in the tank trail that crossed the site from east to west and the eroded west slope. Shovel probes did not locate intact cultural deposits, and no structural remains were found. Several depressions were examined, but none appeared to be related to structures. A scatter of cultural material (33 pieces of glass and ceramics) was found over an area 60 m (north-south) by 50 m, mostly on the southwest portion of the ridge and downslope to the west.

Site 15Md374 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles and tanks, and because there is no evidence of intact historic cultural materials or structural remains. No additional archaeological work is recommended for 15Md374.

15Md375

Site 15Md375 is on a ridge between two drainages that flow northward to Otter Creek (Figures C-2, C-32, and C-45). There are sinkholes to the southwest and southeast. A large amount of cultural material was found over an area 195 m (north-south) by 80 m. Most of the site was eroded to subsoil by tank training. Ground surface visibility was nearly 100 percent on the north end of the site, which had numerous tank trails. There were high weeds, briers, and a few bushes at the south end of the site, which had 10 to 50 percent visibility except in tank trails, where visibility was 100 percent. Shovel probes did not encounter intact cultural deposits, although the high artifact density and the presence of numerous artifact concentrations suggest that isolated features exist on this site.

The cultural material from 15Md375 indicates that the site was the locus of a variety of activities by several groups. Projectile points from the early portion of the Early Archaic (Kirk Corner Notched), the latter portion of the Early Archaic (Kirk Serrated), and the Middle Woodland (Snyders) demonstrate multiple components. Despite the sizable quantity of debitage, the available data suggest the site was occupied repeatedly rather than intensively. The numerous small to very small tertiary flakes, a few microflakes from biface reduction and resharpening, and the wide

variety of cutting and scraping tools and utilized flakes infer a variety of activities potentially indicative of a habitation site. The relative percentage and limited quantity of these flakes, however, do not reflect intensive or extended habitation.

There is abundant evidence of raw material testing and core reduction, but not on a scale that would imply use as a manufacturing site. The majority of the flakes are small core trimming and preparation flakes, many with small amounts of cortex. It is evident from the abundance of thick flakes and of flakes broken along internal fracture planes or imperfections that many chert nodules were tested and partially reduced in an effort to manufacture tools, but there is little evidence of the success of this endeavor. In view of the poor quality of the chert, this reduction may have been ancillary to other activities being carried out at the site. Nodules of chert riddled with natural fracture planes were seen in recent erosional gullies on the side of the site, thus it is possible that the raw material for the fractured debitage may have come from a nearby source. At present, chert studies at Fort Knox are in the initial stages; therefore, the possible sources of raw material for the manufacture of chert tools have not been identified.

Site 15Md375 is potentially eligible for the National Register, although much of it appears to have been deflated to subsoil by wheeled vehicles and tanks. The high artifact density, the presence of numerous formal tools, and the possibility of intact features or recognizable activity areas indicate the need for further investigation. Additional archaeological work is recommended for 15Md375.

15Md376

Site 15Md376 is an open habitation site of indeterminate prehistoric cultural-temporal affiliation (Figures C-2 and C-33). It is located at an elevation of 655 feet on a knoll on a narrow strip of land. It lies approximately 30 m from sinkholes to the northeast and southwest and above a drainage 20 m to the southeast that flows southeastward into Otter Creek. Soil in the site area is Baxter silt loam. Tank trails have deflated and eroded the site well into subsoil, except for one small island of earth with low weeds that is less disturbed. Inspection of the ground surface visible in open patches or at the base of the weeds in this island indicated that this area was also deflated to subsoil, but just less deeply than the rest of knoll. Eight chert flakes were found over a 20 (north-south) by 30 m area on the east side of this less eroded area. There was no evidence of intact cultural materials.

Site 15Md376 is not eligible for the National Register, because it has been deflated to subsoil by wheeled vehicles

and tanks, because it is of indeterminate prehistoric cultural-temporal affiliation, and because there is no evidence of intact cultural materials. No additional archaeological work is recommended for 15Md376.

Isolated Finds

With the exception of TA10-IF9, the isolated finds were assigned a field designation consisting of the training area number and a unique isolated find (IF) number per training area. Isolated find TA10-IF9 was originally assigned a site field designation, but some of the materials were determined to be of natural origin in the laboratory, lowering the cultural material count to two, and repeated visits to the locus failed to locate additional cultural materials. Site TA10-5 was therefore reassigned isolated find designation TA10-IF9. The item assigned field designation TA9-IF1 was determined to be of natural origin in the laboratory and was discarded.

Isolated finds are not eligible for the National Register. No additional archaeological work is recommended at any of the isolated find locations.

TA9-IF2

Isolated Find TA9-IF2 is a tertiary flake found on the uphill slope of a strip of land between two sinkholes (Figures C-1 and C-34). The isolated find was located at an elevation of 710 feet about 440 m west of Pinwheel Road and 870 m southeast of the intersection of Pinwheel Road and Airstrip Road. The soil in the area is Hammack-Baxter silt loam. There was 100 percent visibility in the surrounding area, which was eroded to subsoil by tank training and natural erosion. Despite survey at close intervals (2 m), no additional cultural material was found. The artifact may have been displaced downhill from 15Md357 or another upland site or may have been relatively *in situ*.

TA10-IF1

Isolated Find TA10-IF1 consists of a two items--a lateral fragment of a biface and a tertiary flake--found about 30 m apart (Figures C-3 and C-35). The isolated find area is located at an elevation of 670 feet. It lies on the south side of a deeply gullied slope of a sinkhole about 50 m south of Twin Bridge Road and 500 m east of Basham Road. The soil in the area is Baxter silt loam. The surface was severely eroded by tank training and there was 100 percent visibility. Despite survey at close intervals (2 to 5 m), no additional cultural material was found. Only a few small,

isolated patches of scrub vegetation were present in the vicinity, and the cultural materials were probably washed downhill into the locations where they were found from a site either destroyed by the construction of Twin Bridge Road or located north of the road and outside the current project area.

TA10-IF2

Isolated Find TA10-IF2 is a tertiary flake found on a western slope at the head of a drainage that flows westward into Otter Creek (Figures C-3 and C-36). The isolated find was located at an elevation of 635 feet about 400 m south of Twin Bridge Road and 550 m east of Basham Road. The soil in the area is Baxter silt loam. The surface was severely eroded by tank training and there was 100 percent visibility. Despite survey at close intervals (2 to 5 m), no additional cultural material was found. Only a few small, isolated patches of scrub vegetation were present in the vicinity, and the cultural material was probably washed downhill into the location where it was found.

TA10-IF3

Isolated Find TA10-IF3 is a tested tabular block of chert found on a southern slope at the head of a drainage that flows westward into Otter Creek (Figures C-3 and C-36). The isolated find was located at an elevation of 655 feet about 480 m south of Twin Bridge Road and 570 m east of Basham Road. The soil in the area is Baxter silt loam. The surface was severely eroded by tank training and there was 100 percent visibility. Despite survey at close intervals (2 to 5 m), no additional cultural material was found. Only a few small, isolated patches of scrub vegetation were present in the vicinity, and the artifact was probably washed downhill into the location where it was found.

TA10-IF4

Isolated Find TA10-IF4 is a large secondary flake of nodular Wyandotte chert found on a low area between two sinkholes (Figures C-3 and C-37). The isolated find was located at an elevation of 660 feet about 580 m south of Twin Bridge Road and 570 m east of Basham Road. The soil in the area is Baxter silt loam. The surface was severely eroded by tank training and there was 100 percent visibility in the tank trails. Despite survey at close intervals (2-5 m), no additional cultural material was found. Only a few small, isolated patches of scrub vegetation were present in the vicinity. The artifact was probably washed downhill into the location where it was found.

TA10-IF5

Isolated Find TA10-IF5 is a utilized tertiary chert flake found on the slope at the south edge of a sinkhole (Figures C-3 and C-38). The isolated find was located at an elevation of 660 feet about 400 m south of Twin Bridge Road and 390 m east of Basham Road. The soil in the area is Baxter silt loam. The surface was severely eroded by tank training and there was 100 percent visibility in the tank trails. Despite survey at close intervals (2 to 5 m), no additional cultural material was found. Only a few small, isolated patches of scrub vegetation were present in the vicinity. The artifact was probably washed downhill into the location where it was found.

TA10-IF6

Isolated Find TA10-IF6 is a tertiary chert flake found on the southwest slope of a huge sinkhole (Figures C-3 and C-39). The isolated find was located at an elevation of 655 feet about 880 m south of Twin Bridge Road and 400 m east of Basham Road. The soil in the area is Baxter silt loam. The surface was severely eroded by tank training and there was 100 percent visibility. The artifact was obviously redeposited, since it was found about 2.5 m below ground surface in a deeply eroded tank trail.

TA10-IF7

Isolated Find TA10-IF7 is a circular end scraper, made from a secondary flake of nodular Wyandotte chert. It was found on the north slope of a huge sinkhole (Figures C-3 and C-40). The isolated find was located at an elevation of 645 feet about 600 m south of Twin Bridge Road and 640 m east of Basham Road. The soil in the area is Baxter silt loam. A wide band of the surface was severely eroded by tank training and there was 100 percent visibility in the tank trail. Despite survey at close intervals (2 to 5 m), no additional cultural material was found. There were large trees and bushes around the sinkhole. The artifact may have been washed downhill into the location where it was found, or may have been relatively in situ.

TA10-IF8

Isolated Find TA10-IF8 is a piece of chert shatter found on the southwestern slope at the head of a drainage that flows east into Otter Creek (Figures C-3 and C-41). The isolated find was located at an elevation of 630 feet about 500 m north of U.S. 60 and 470 m east of Basham Road. The soil in the area is Baxter silt loam. The upper slope was

surface was severely eroded by tank training and natural erosion due to lack of vegetation in the vicinity. There was nearly 100 percent visibility in the tank trails and the sparsely weed-covered surface of the slope. Despite survey at close intervals (2 to 5 m), no additional cultural material was found. There were large trees and bushes around the sinkhole. The artifact may have been washed downhill into the location where it was found, or may have been relatively *in situ*.

TA10-IF9

Isolated Find TA10-IF9 consists of two tertiary flakes found about 5 m apart (Figures C-3 and C-42). The isolated find area is located at an elevation of 660 feet, approximately 50 m east of Basham Road and 350 m south of Twin Bridge Road. It lies on a low rise between sinkholes to the north and south. The entire area has been deflated to subsoil by wheeled vehicles and tanks, and is deeply rutted. There is no evidence of intact cultural materials or of potential intact cultural deposits. There were sparse weeds and grass covering the site, except where the tank trails crossed it. Despite excellent visibility and intensive survey (2 to 5 m intervals on each of three visits), no additional cultural material was found.

VIII. CONCLUSIONS AND RECOMMENDATIONS

The Phase I archaeological investigation of the two scheduled Fall 94 rehab areas resulted in the recording of sites 15Md347 through 15Md376 and 10 isolated finds. Sites 15Md347 through 15Md361, and Isolated Find TA9-IF2, are located in the Training Area 9 rehab area. Sites 15Md362 through 15Md376 and Isolated Finds TA10-IF1 through TA10-IF9 lie in rehab area TA10.

Table 3 summarizes the distribution of culturally diagnostic materials recovered from the sites and isolated find locations. Although some of the sites and isolated find locations may never have included projectile points or other diagnostics, it is likely that the projectile points and other formal tools have been removed from the sites by relic collectors deliberating searching the sites, or by the historic residents or military personnel keeping accidental discoveries. Tank training is expected to have destroyed any prehistoric ceramics which may have been present on the more deflated or eroded sites, due to the weight of the tanks.

Historic materials were recovered from 10 sites (15Md347 through 15Md349, 15Md356, 15Md362, 15Md364, 15Md367, 15Md370, 15Md371, and 15Md374). The small amount of historic materials recovered from 15Md347 through 15Md349 are believed to be redeposited materials or the result of historic/modern secondary refuse dumping along property lines, ravines, or roads, however, and not actual historic components. Some of the historic farmsteads known to have once existed in Training Area 9 did not translate into historic archaeological sites, and the materials recovered from 15Md347 through 15Md349 may represent the redeposited remnants of these destroyed farmsteads. All of the historic components fall within the mid nineteenth to mid twentieth century range. Most of the historic components are believed to represent farmsteads. A high percentage of stoneware vessels from crocks (including some very massive vessels), jugs, or containers with relief decoration in a basket or barrel pattern at 15Md356 suggests that 15Md356 may have been the site of a store or else of a cottage industry at which products were canned or otherwise prepared for commercial distribution.

Sites 15Md367 and 15Md370, both historic sites, fell within the boundaries of a single historic property. The assemblage from 15Md367 contained earlier materials than 15Md370, although there was considerable overlap in the more recent range of both sites and the 15Md370 assemblage is too small to firmly date other than to late nineteenth to mid twentieth century. Many of the artifacts from 15Md367 were fire-damaged. It is hypothesized that 15Md367, near the center of the David F. Peak property, was the site of the original house, that this house burned, and that a new house was

TABLE 3. Summary of Culturally Diagnostic Material.

	indeter-minate	Paleo-Indian	Archaic E	Archaic M	Archaic L	L. Archaic-E. Woodland	Woodland E	Woodland M	Woodland L	L. Woodland-Mississippian	Missis-sippian	Proto-historic	Historic
15Md347	X												X
15Md348					X			X					X
15Md349					X								X
15Md350	X												
15Md351					X								
15Md352	X												
15Md353			X	X									
15Md354	X												
15Md355	X												
15Md356													X
15Md357	X												
15Md358	X												
15Md359	X												
15Md360	X												
15Md361	X												
15Md362	X												X
15Md363	X												
15Md364													X
15Md365	X												
15Md366								X					
15Md367													X
15Md368	X												
15Md369	X												
15Md370													X
15Md371	X												X
15Md372	X												
15Md373	X												
15Md374													X
15Md375			X					X					
15Md376	X												
TA9-IF2	X												
TA10-IF1	X												
TA10-IF2	X												
TA10-IF3	X												
TA10-IF4	X												
TA10-IF5	X												
TA10-IF6	X												
TA10-IF7	X												
TA10-IF8	X												
TA10-IF9	X												

built at 15Md370, closer to the county road. Alternatively, the two sites may be contemporaneous, with 15Md367 deriving from Peak's farmstead and 15Md370 representing the house of relative or tenant or else an outbuilding placed closer to the road.

Several sites overlapped to one extent or another, but could be distinguished from each other due to the distinctiveness of the components. Historic site 15Md364 lay between the smaller prehistoric sites 15Md363 and 15Md365, but historic materials had been redeposited onto the prehistoric sites as a result of the tank training activities. The prehistoric sites were each small lithic scatters and were separated by too great a distance to lump the prehistoric materials as a single site. Historic site 15Md374 overlapped with prehistoric sites 15Md373 and 15Md375. In this case the historic site did not entirely encompass the prehistoric sites, but bridged a gap between the prehistoric sites, only partially overlapping with each site. The prehistoric sites not only were spatially separated--on opposite sides of a small sink--but also differed in the elevation of the location, the artifact densities on the sites, and the artifact classes represented in the assemblages.

Sites 15Md347, 15Md348, 15Md350, 15Md352 through 15Md374, and 15Md376 are not eligible for the National Register primarily due to the lack of evidence of intact cultural deposits and evidence of prior disturbance due to tank training and erosion. Low artifact densities and counts, homogeneous artifact assemblages, and lack of evidence for identifiable activity areas were also contributing factors for the recommendation that these sites were not eligible for the National Register. No additional archaeological investigations are recommended for 15Md347, 15Md348, 15Md350, 15Md352 through 15Md374, and 15Md376.

All of the isolated finds are of indeterminate prehistoric affiliation and all of the isolated finds were discovered under conditions of good to excellent ground surface visibility in areas deflated or eroded to subsoil. Isolated finds are not eligible for the National Register. No additional archaeological investigations are recommended for the 10 isolated find locations.

Site 15Md349 is an open habitation site with a Late Archaic component. Due to the large size of the site, it is considered possible that other components exist as well. Site 15Md349 is potentially eligible for the National Register, because of the possibility of isolated intact subsurface features and because the high artifact density suggests that further study of the surface materials may contribute significant information about intrasite patterning whether or not subsurface features are present. Additional archaeological investigations are recommended for 15Md349.

Site 15Md351 is an open habitation site of Late Archaic cultural-temporal affiliation. It has a high density of cultural materials and artifact concentrations were observed which might indicate the presence of intact subsurface cultural features or identifiable surface/plowzone activity areas. It is potentially eligible for the National Register, due to the potential for buried deposits, as indicated by the results of the shovel probes and its presence in the floodplain of the Dry Branch. Additional archaeological investigations are recommended for 15Md351.

Site 15Md375 is an open habitation site with Early Archaic and Middle Woodland components. It is potentially eligible for the National Register, because of the possibility of intact subsurface features, the presence of artifact concentrations, and the high artifact density. Additional archaeological investigations are recommended for 15Md375.

Sites 15Md349, 15Md351, and 15Md375 are all in similar settings, i.e., relatively broad areas which are less deeply deflated or eroded than most portions of the rehab areas. Because they are not deeply eroded, a disk will be the primary piece of heavy equipment used in the rehab work, rather than a bulldozer (which is needed to grade deeply gullied areas) on each of these sites (Gail Pollock 1994: personnal communication). The details of what will be done at each site are the field decision of the contractor responsible for rehabbing the area, however, so it is not possible to determine which portions of a particular site may need to be graded at this time.

Avoidance of 15Md349, 15Md351, and 15Md375 is not feasible. If the sites are avoided by the rehab work, they will continue to erode, which is not desirable. Phase II archaeological investigations are therefore recommended at each of the three sites in conjunction with the rehab work.

Because rehab work is scheduled to begin in early September, it is recommended that the Phase II investigation be integrated into and coordinated with the actual rehabilitation fieldwork. Rather than separately arrange to have these three sites disked in preparation for a surface collection, it is recommended that the Fort Knox CRM staff work with the rehab contractor who will already be under contract to provide the heavy equipment to be used in rehabbing the areas.

The contractor will be instructed to limit the disking to within 20 cm (8 inches) of the existing ground surface. The CRM staff will establish a surface collection grid on each site and collect diagnostic artifacts and other materials likely to be removed by collectors immediately after the disking is completed at each site. Following disking, the rehab contractor will be requested to avoid the site location until a controlled surface collection has been made. The CRM staff will work with the game wardens and other

security personnel to monitor the sites until the surface collection has been completed to deter unauthorized collecting. If feasible, the controlled surface collection will be delayed until after a light rain. As soon as possible after the surface collection is complete, the contractor will be requested to finish the rehab work on the archaeological sites. Completion of the rehab work may include some grading with a bulldozer, plus the spreading of lime, reseeding, and placing mulch. Completion of the rehab work will help protect the sites by immediately covering the sites with hay, and by establishing a grass cover which will control erosion and relic collecting.

Areas which need to be graded with a bulldozer tend to be deeply rutted, on steep slopes, or otherwise situated so as to have a low potential for intact cultural deposits. It is sometimes necessary, however, to grade adjoining less disturbed areas in order to obtain sufficient material to fill in gullies. In the event that bulldozer grading is needed at 15Md349, 15Md351, and/or 15Md375, the grading will be monitored by the CRM staff. If intact cultural deposits are encountered, bulldozing will cease in the vicinity of the intact deposits until they can be inspected and documented. If cultural features are discovered, the features will be hand excavated using standard archaeological techniques. If a large number of features are encountered, a representative sample of features will be excavated.

Because the rehab work at sites 15Md349, 15Md351, and 15Md375 is not expected to destroy entirely the archaeological deposits and the completion of the rehab work is expected to control erosion and relic collecting on the sites, it is preferred that the Phase II investigations be limited to the disking, controlled surface collection, monitoring of grading, and hand excavation of cultural features exposed. Rehabbed areas are not used for tank training for two or more years after rehabbing. It is recommended that the results of the Phase II investigations outlined above be presented in a formal report of investigations, and that these results be used to develop a Phase II-continuation or a Phase III mitigation plan, if warranted. It is further recommended that this continuation or mitigation plan be implemented prior to the reuse of the site areas for tank training.

If archaeological materials are discovered during the rehab activities, all activity in the vicinity of the finds must cease and the State Historic Preservation Officer (502-564-6661) and the DPW staff archaeologist (502-624-6581) should be contacted, so a representative of those agencies may evaluate the materials. Also, if human remains, regardless of age or cultural affiliation, are discovered, all activity in the vicinity of the remains must cease immediately, and the state medical examiner (502-564-4545) and the appropriate local law enforcement agency (Fort Knox Law

Enforcement Command, 502-624-6852) must be contacted, as stipulated in KRS 72.020.

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APPENDIX A.

RESUMES OF KEY PERSONNEL

Pamela A. Schenian
Staff Archaeologist and Project Principal Investigator

Office Address: Directorate of Public Works
ATTN: ATZK-DPW (Schenian)
U.S. Army Armor Center and Fort Knox
Fort Knox, Kentucky 40121-5000
Phone: (502) 624-6581

Date and Place of Birth: January 1, 1959; Waukesha, WI.

Present Position: J.M. Waller & Associates/Fort Knox Staff Archaeologist and Cultural Resource Manager

Education:
A.B.D. in Anthropology, Northwestern University, 1984.
M.A. in Anthropology, Northwestern University, 1982.
A.B. in Anthropology, Bryn Mawr College, 1980.

Previous Employment:
Senior Staff Archeologist, Archeology Service Center, Department of Sociology, Anthropology, and Social Work, Murray State University, Murray, KY, November 1991-June 1993; Staff Archeologist, November 1983-November 1991.
Southern Illinois University, Carbondale, IL: Field Technician, November-December 1985, September-October 1984.
Illinois State Museum Society, Springfield, IL: Field Assistant II (Supervisor), summer 1983; Field Technician, summer 1981.
Center for American Archeology, Kampsville, IL: Field Technician, summer 1982.
Department of Anthropology, Northwestern University, Evanston, IL: Teaching Assistant, 1981-82 academic year.
Great Lakes Archeological Research Center, Milwaukee, WI: Field Technician, summer 1979.

Field Research Experience:
Prehistoric and historic archaeological projects in the states of Illinois, Indiana, Kentucky, New Jersey, South Dakota, Tennessee, and Wisconsin, 1979-present.

Professional Publications, Reports, Papers and Manuscripts:
85 CRM contract reports on projects in Indiana, Kentucky, and Tennessee.
1 Homocide site excavation contract report prepared in lieu of court testimony in Illinois.
7 Papers presented at professional conferences.
5 Publications, 1 in press.
Doctoral candidacy qualifying paper: "A Theory of Individual Style Variation for Archeological Studies".
Manuscript submitted in partial fulfillment of the M.A. requirements: "Models of Environmental-Cultural Relationships: Testing with Archeological Evidence".

Stephen T. Mocas
Assistant Staff Archaeologist

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Present Position: University of Louisville Program of Archaeology/Fort Knox Assistant Staff Archaeologist

Education:

Completed one year of doctoral program, Southern Illinois University, Carbondale, Illinois, 1972.

B.A. in Anthropology, University of Louisville, 1971.

Previous Employment:

Indiana University, Bloomington, Indiana: Staff Archaeologist, September 1991-November 1993.

Murray State University, Murray Kentucky: Staff Archaeologist, November 1991-November 1993.

Jefferson Community College, Louisville, Kentucky. Anthropology Instructor, August 1981-December 1982.

Louisville School of Art, Louisville, Kentucky: Anthropology Instructor, January-May 1976.

University of Louisville Archaeological Survey, Louisville, Kentucky. Project Director, Field Supervisor, or Research Assistant on various projects, July 1969-January 1977.

State University of New York of Buffalo, Buffalo, New York. Senior Field Worker, June-August 1970.

Field Research Experience:

Field experience, Phase I-III, prehistoric and historic archaeological projects in the states of Illinois, Indiana, Kentucky, New York, and Tennessee, 1969-present.

Research Grants:

Six grants for fieldwork and research.

Professional Publications, Reports, Papers and Manuscripts:

3 non-contract site reports on projects
18 CRM contract reports on projects
5 Chapters in additional site reports.
4 Publications, 1 in press.